IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

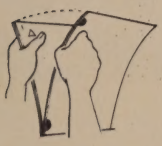
This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

TO OPEN ***JUST DO THIS:***



1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.

3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 504 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ OCT. 1960

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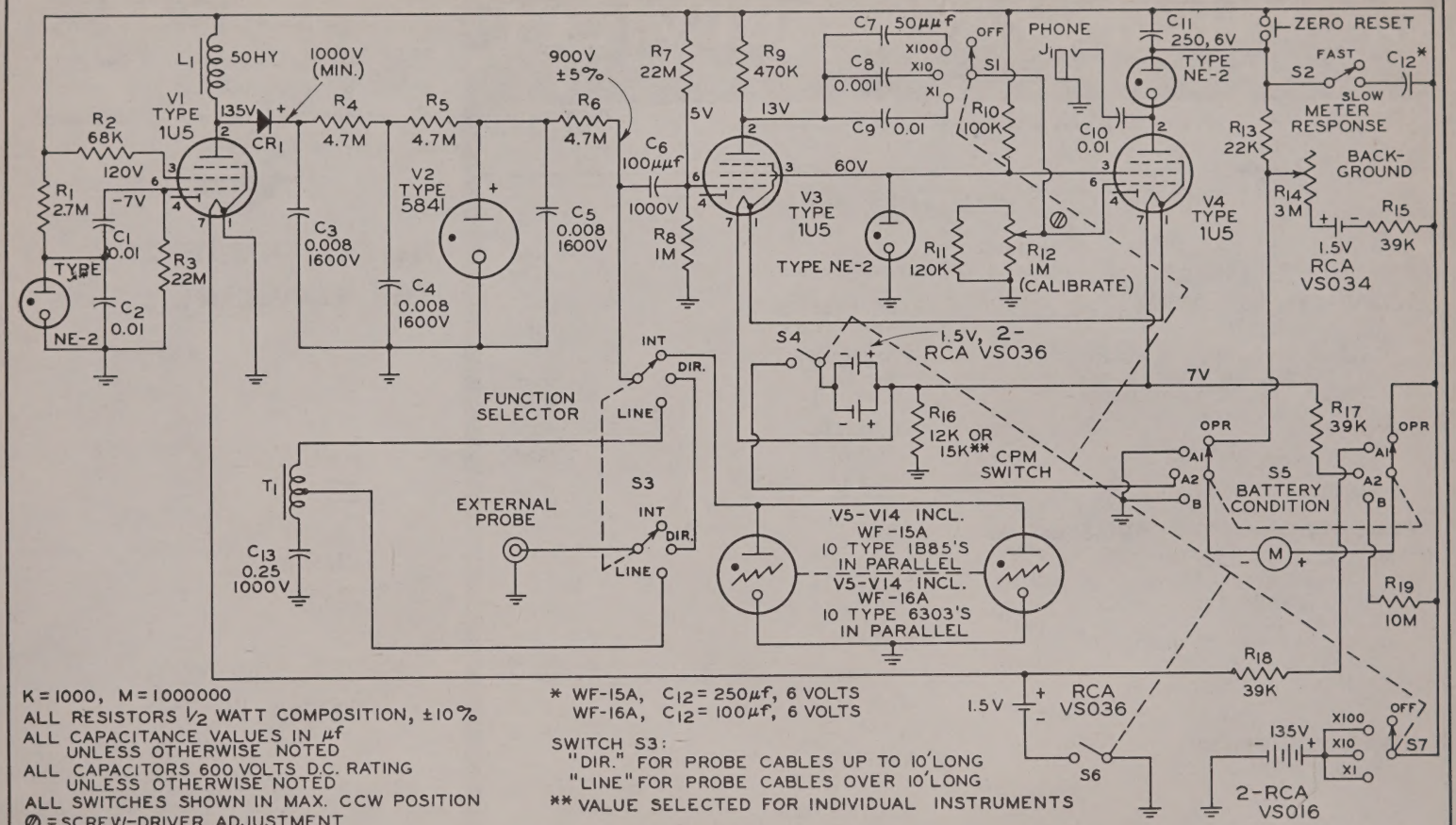
This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

GMC Model 2233338

GMC Model 2233396

RCA Victor Models WF-15A, WF-16A



K = 1000, M = 1000000

ALL RESISTORS 1/2 WATT COMPOSITION, ±10%

ALL CAPACITANCE VALUES IN μf UNLESS OTHERWISE NOTED

ALL CAPACITORS 600 VOLTS D.C. RATING UNLESS OTHERWISE NOTED

ALL SWITCHES SHOWN IN MAX. CCW POSITION

⌀ = SCREW-DRIVER ADJUSTMENT

* WF-15A, C_{12} = 250μf, 6 VOLTS
WF-16A, C_{12} = 100μf, 6 VOLTS

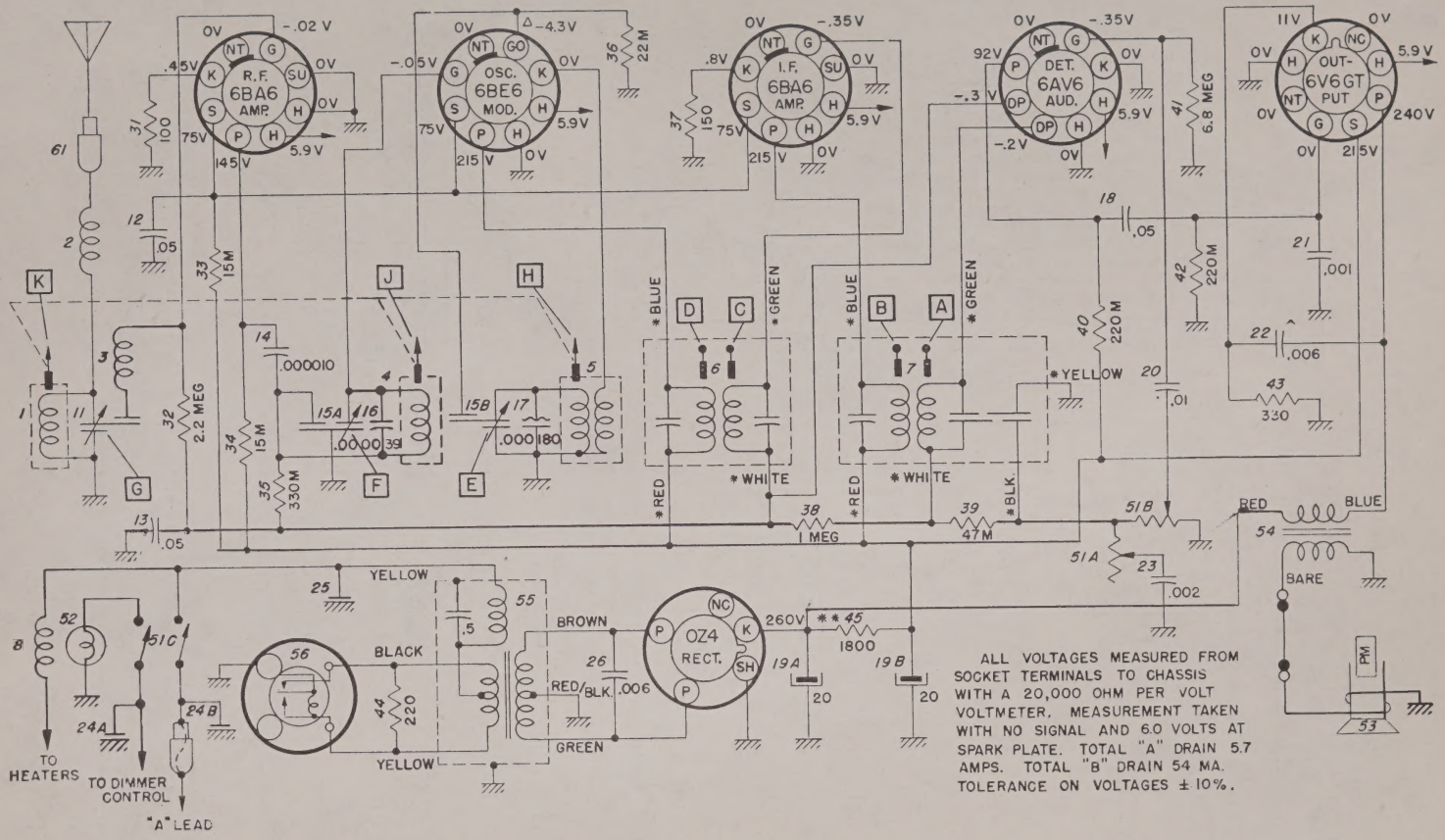
SWITCH S3:
"DIR." FOR PROBE CABLES UP TO 10' LONG
"LINE" FOR PROBE CABLES OVER 10' LONG

** VALUE SELECTED FOR INDIVIDUAL INSTRUMENTS

ALL VOLTAGES ARE DC AND MEASURED WITH A VOLTOHMYST.® VOLTAGES SHOULD HOLD WITHIN ±20%. USE HIGH-VOLTAGE PROBE FOR MEASURING GEIGER-COUNTER TUBE VOLTAGES

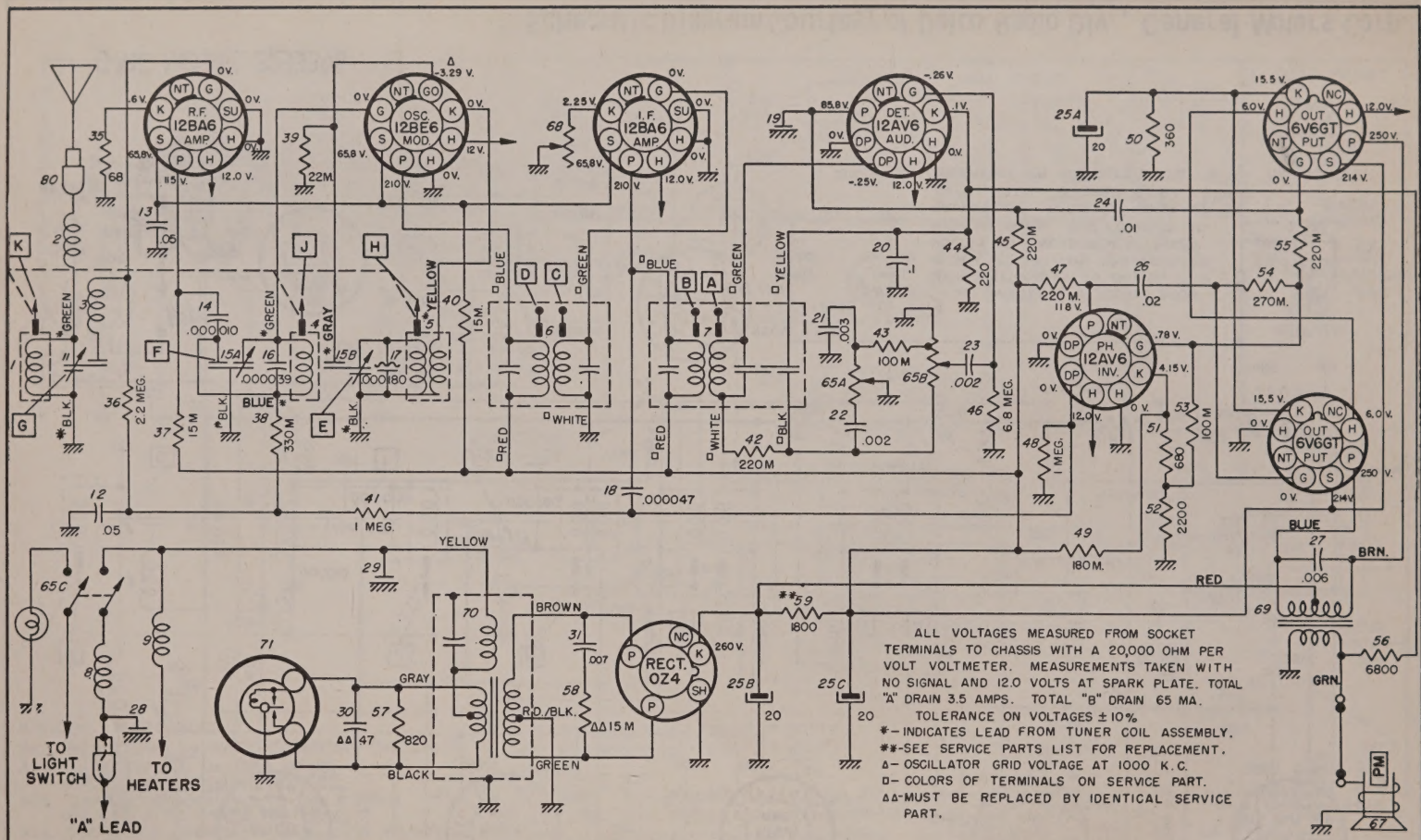
RCA VICTOR MODELS WF-15A, WF-16A GEIGER COUNTER

Schematic Diagram Courtesy of Radio Corporation of America


R.F. 6BA6 AMP.
OSC. 6BE6 MOD.
I.F. 6BA6 AMP.
DET. 6AV6 AUD.
OUT- 6V6GT PUT
6Z4 RECT.
ALL VOLTAGES MEASURED FROM SOCKET TERMINALS TO CHASSIS WITH A 20,000 OHM PER VOLT VOLTMETER. MEASUREMENT TAKEN WITH NO SIGNAL AND 6.0 VOLTS AT SPARK PLATE. TOTAL "A" DRAIN 5.7 AMPS. TOTAL "B" DRAIN 54 MA. TOLERANCE ON VOLTAGES ± 10%.
TO HEATERS
TO DIMMER CONTROL
"A" LEAD

GMC MODEL 2233396

Schematic Diagram Courtesy of Delco Radio Div., General Motors Corp.


R.F. 12BA6 AMP.
OSC. 12BE6 MOD.
I.F. 12BA6 AMP.
DET. 12AV6 AUD.
PH. 12AV6 INV.
OUT PUT 6V6GT
OUT PUT 6V6GT
RECT. 0Z4
TO LIGHT SWITCH
TO HEATERS
"A" LEAD
ALL VOLTAGES MEASURED FROM SOCKET TERMINALS TO CHASSIS WITH A 20,000 OHM PER VOLT VOLTMETER. MEASUREMENTS TAKEN WITH NO SIGNAL AND 12.0 VOLTS AT SPARK PLATE. TOTAL "A" DRAIN 3.5 AMPS. TOTAL "B" DRAIN 65 MA.
TOLERANCE ON VOLTAGES ± 10%
*– INDICATES LEAD FROM TUNER COIL ASSEMBLY.
**-SEE SERVICE PARTS LIST FOR REPLACEMENT.
Δ– OSCILLATOR GRID VOLTAGE AT 1000 K.C.
□– COLORS OF TERMINALS ON SERVICE PART.
ΔΔ-MUST BE REPLACED BY IDENTICAL SERVICE PART.

GMC MODEL 2233338

Schematic Diagram Courtesy of Delco Radio Div., General Motors Corp.

PHOTOFACT® Folder

AIRLINE MODELS WG-4600A, 01A, 06A, 11A, WG-4700A, 01A, 06A, 11A, WG-5202A, 04A, 06A, 07A, 08A, 12A, 17A, WG-5302A, 04A, 06A, 07A, 08A, 12A, 17A

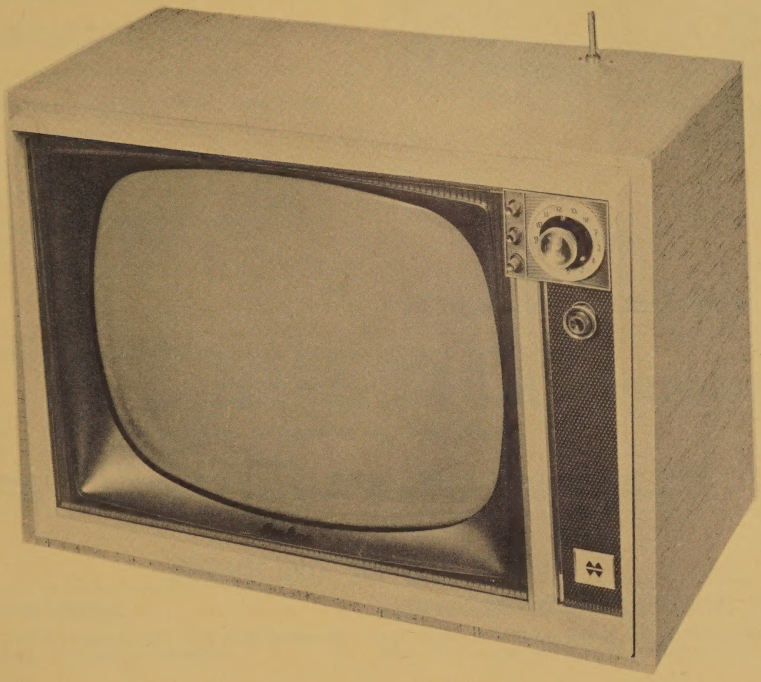
IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

AIRLINE MODELS WG-4600A, 01A, 06A, 11A, WG-4700A, 01A, 06A, 11A, WG-5202A, 04A, 06A, 07A, 08A, 12A, 17A, WG-5302A, 04A, 06A, 07A, 08A, 12A, 17A

AIRLINE MODELS WG-4600A, 01A, 06A, 11A, WG-4700A, 01A, 06A, 11A, WG-5202A, 04A, 06A, 07A, 08A, 12A, 17A, WG-5302A, 04A, 06A, 07A, 08A, 12A, 17A



MODEL WG-4600A

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET 504 FOLDER 1

PHOTOFACT® Folder

AIRLINE MODELS WG-4600A, 01A, 06A, 11A, WG-4700A, 01A, 06A, 11A, WG-5202A, 04A, 06A, 07A, 08A, 12A, 17A, WG-5302A, 04A, 06A, 07A, 08A, 12A, 17A

AIRLINE MODELS WG-4600A, 01A, 06A, 11A, WG-4700A, 01A, 06A, 11A, WG-5202A, 04A, 06A, 07A, 08A, 12A, 17A, WG-5302A, 04A, 06A, 07A, 08A, 12A, 17A

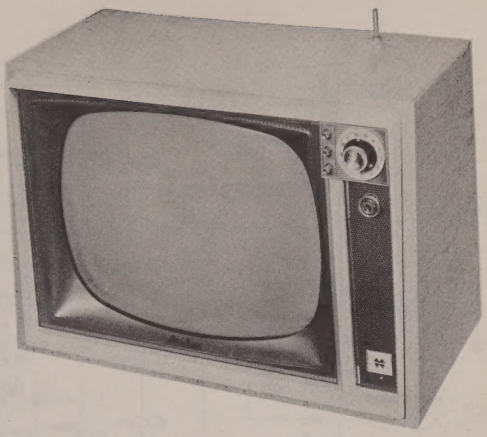
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL WG-4600A, -4700A

1. Remove 12 wood screws holding rear cover. Remove rear cover.
2. Remove 5 push-on type knobs from front of cabinet.
3. Remove speaker leads, high voltage lead, picture tube socket, yoke plug, and chassis ground wire.
4. Remove 4 screws holding braces to chassis.
5. Remove 4 screws holding tuner bracket. Remove tuner.
6. Remove 4 chassis bolts.
7. Remove chassis.

PICTURE TUBE REMOVAL

It is necessary to remove the chassis for picture tube removal. (See "Chassis Removal".)



MODEL WG-4600A

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

TRADE NAME	AIRLINE MODELS WG-4600A, WG-4601A, WG-4606A, WG-4611A, WG-4700A, WG-4701A, WG-4706A, WG-4711A, WG-5202A, WG-5204A, WG-5206A, WG-5207A, WG-5208A, WG-5212A, WG-5217A, WG-5302A, WG-5304A, WG-5306A, WG-5307A, WG-5308A, WG-5312A, WG-5317A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Avenue, Chicago, Illinois
TYPE SET	Television Receiver
TUBES	VHF - Fourteen, UHF - Fifteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING VHF - 140 Watts, 1.3 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 2 screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.

FUSE DEVICE

A 7.5Ω fusible resistor is used for low voltage power supply protection. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning Knobs.

AGC

The AGC may be varied by means of a Range Control. (For location, see "Tube Placement Chart".)

FOCUS

No provision is made to vary the focus on this receiver.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive Trimmer. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz Control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

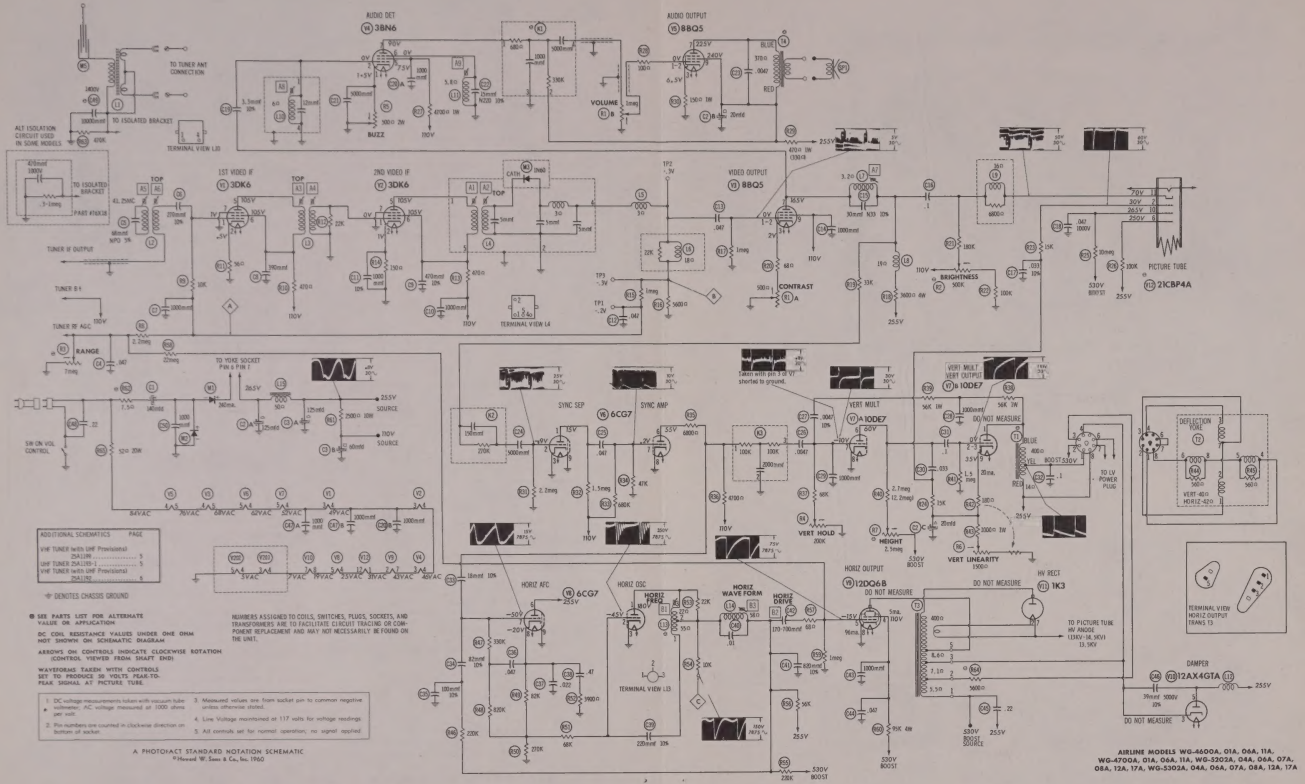
Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

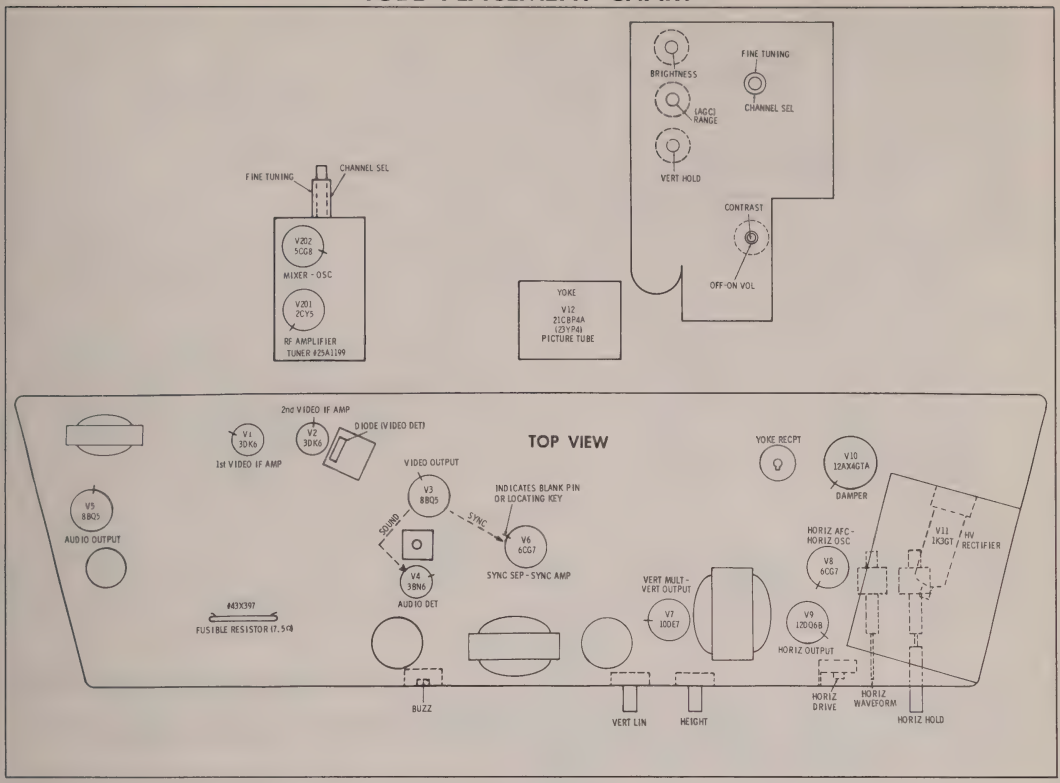
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KA322

SET 504 FOLDER 1


AUDIO DET
W1 3BN6
AUDIO OUTPUT
W5 8BQ5
1ST VIDEO IF
V1 3DK6
2ND VIDEO IF
V2 3DK6
VIDEO OUTPUT
V9 8BQ5
SYNC SEP
V6 6CG7
SYNC AMP
VERT MULT
V7 A 10DE7
VERT MULT
V7 B 10DE7
HORIZ AFC
V8 6CG7
HORIZ OSC
HORIZ MULT
HORIZ WAVE FORM
HORIZ DRIVE
HORIZ OUTPUT
V9 12DQ6B
HV RECT
V11 1K3
DAMPER
V10 12AX4GTA
PICTURE TUBE
V12 21CBP4A
VOLUME
CONTRAST
BRIGHTNESS
HEIGHT
VERT HOLD
VERT LINEARITY
RANGE
TUNER IF OUTPUT
TUNER RF AGC
TO TUNER ANT CONNECTION
TO ISOLATED BRACKET
TO YOKE SOCKET Pin 6 Pin 7
TO LV POWER PLUG
DEFLECTION YOKE
VERT-HORIZ-420
TERMINAL VIEW HORIZ OUTPUT TRANS T3
TERMINAL VIEW L3
TERMINAL VIEW L4
TERMINAL VIEW L10
ADDITIONAL SCHEMATICS PAGE
VHF TUNER With UHF Provisions) 2SA109 5
UHF TUNER 2SA109-1 5
VHF TUNER With UHF Provisions) 2SA190 5
DENOTES CHASSIS GROUND
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC CON. RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
1. DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1960
AIRLINE MODELS WG-4600A, 01A, 06A, 11A.
WG-4700A, 01A, 06A, 11A, WG-5202A, 04A, 06A, 07A,
08A, 12A, 17A, WG-5302A, 04A, 06A, 07A, 08A, 12A, 17A

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

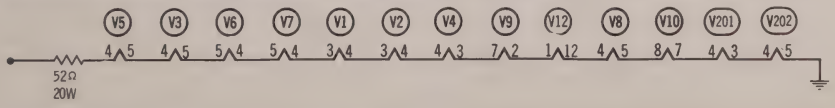
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor (7.5Ω), Rectifiers (B+)

SWEEP FAILURE
No raster, has sound V8, V9, V10, V11, V12
No vertical deflection V7
Poor vert. linearity or foldover V7
Poor horiz. linearity or foldover V8, V9, V10
Narrow picture V8, V9, V10, Rectifiers (B+)
Vert. off freq. V7
Horiz. off freq. V8

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, Diode (Video Det.), V3
No pic, no sound, has snow V201, V202
No pic, has sound, has raster V3, V12
Has pic, no sound V4, V5

SYNC FAILURE
No vert. sync V6
No horiz. sync V6
No vert. or horiz. sync V6

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



AIRLINE MODELS WG-4600A, 01A, 06A, 11A, WG-4700A, 01A, 06A, 11A, WG-5202A, 04A, 06A, 07A, 08A, 12A, 17A, WG-5302A, 04A, 06A, 07A, 08A, 12A, 17A

FOLDER 1

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 7 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01mfd	High side to pin 1 (grid) of 2nd Video IF. Low side to chassis. Adjust output for 4VP-P on scope.	44.0MC (10MC Swp)	42.4MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 47K to point (B). Low side to chassis. (Across Video Det. load)	A1, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. A1 controls marker position and A2 controls gain and symmetry.
2.	"	High side to pin 1 (grid) of 1st Video IF. Low side to chassis. Adjust for 4VP-P on scope.	"	42.4MC 43.5MC 44.5MC 45.75MC	"	"	A3, A4	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. A3 controls marker position and A4 controls gain and symmetry.
3.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	41.25MC 42.4MC 43.5MC 44.5MC 45.75MC	"	"	A5, A6, & Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. Adjust A5 to place 41.25MC marker in trap notch.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01mfd	High side to pin 2 (grid) of Video Output. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	AC probe to pin 11 (cathode) of picture tube. Common to chassis. Use 0-10V AC scale.	A7	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV station and reduce the signal strength at the antenna terminals until a hiss is heard in the sound similar to super-regeneration.
Adjust A8, A9 and the Buzz control for maximum undistorted sound with MINIMUM buzz.
If the hiss disappears during adjusting, further reduce the signal strength.

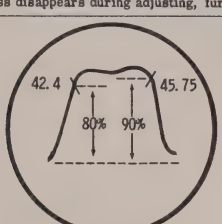


FIG.1

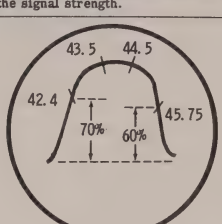


FIG.2

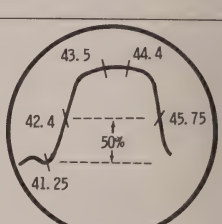


FIG.3

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Suggested Alignment Tools:
B1, B3.... GENERAL CEMENT #8271, 8279
WALSCO #2524, 2527
B2 ..... 1/4" Nut Driver

Turn the Horizontal Hold fully clockwise. Tune in a station and adjust the Horizontal Frequency slug (B1) until the picture is just about to tear out of sync as can be seen at the top of the picture.

Turn the Contrast fully counterclockwise and the Brightness clockwise so that the picture appears washed out. Turn the Horizontal Drive trimmer (B2) clockwise until white vertical bars (drive lines) appear in the left center portion of the raster, then counterclockwise until the white bars just disappear.

Connect the vertical amplifier of a scope to point (C). Low side to chassis. Adjust the Horizontal Waveform slug (B3) until the round and sharp peaks of the waveform are equal in amplitude. See Fig. 4. Keep the picture in sync during this adjustment.

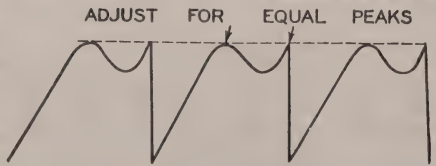
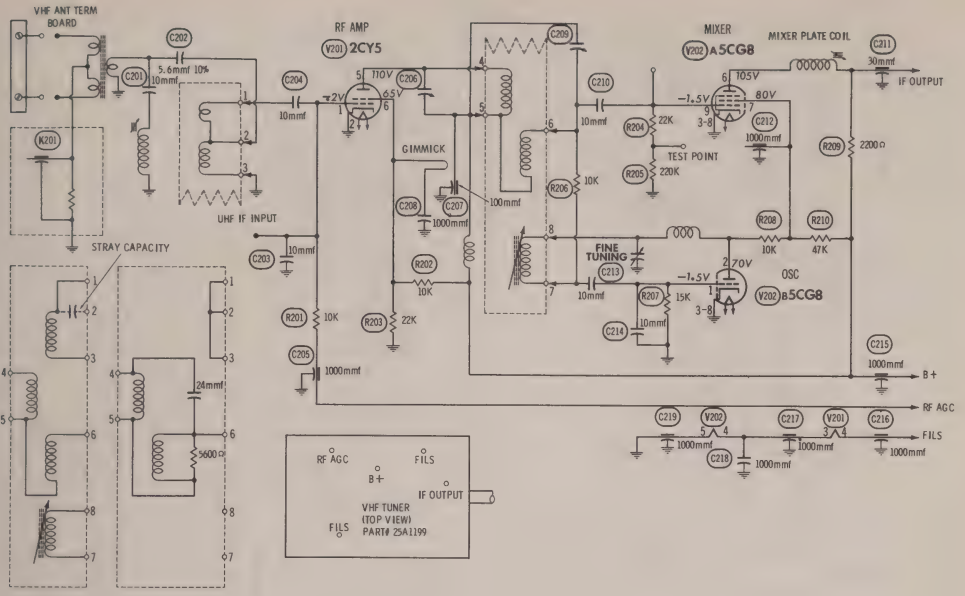


FIG. 4



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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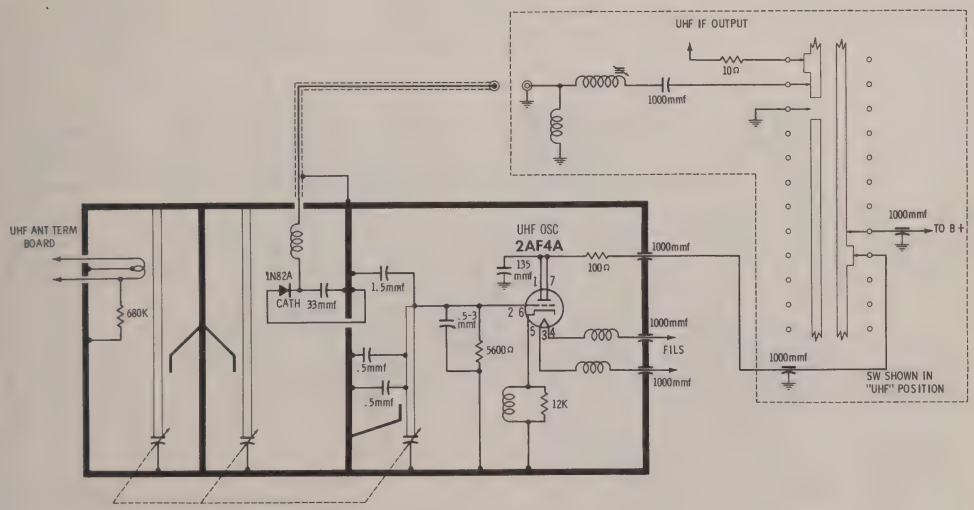
VHF TUNER with UHF Provisions - 25A1199



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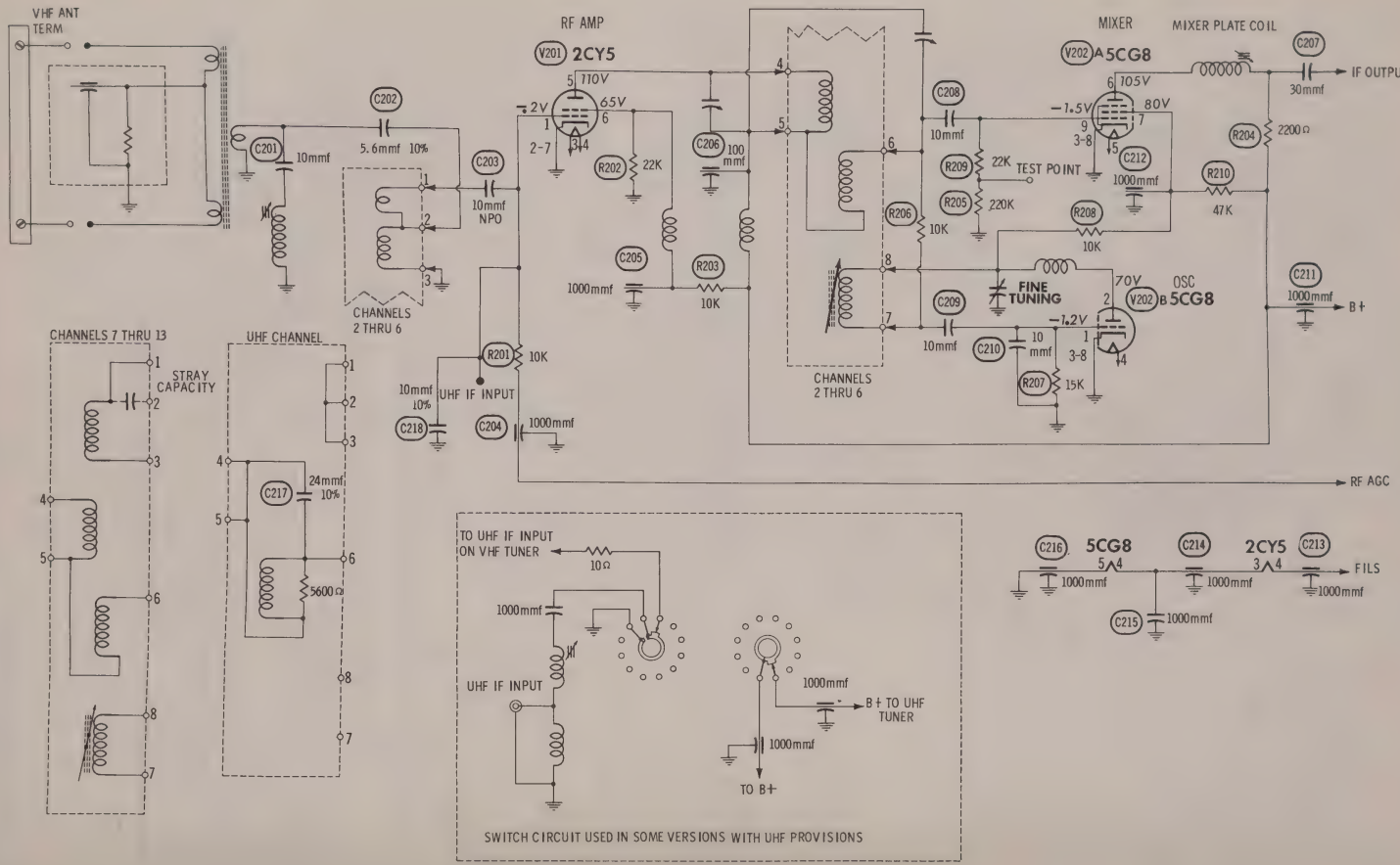
UHF TUNER 25A1193-1



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER with UHF Provisions - 25A1192

TUNER PARTS LIST AND DESCRIPTIONS

25A1199

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	2CY5	V202	Mixer - Osc.	5CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C202	5.6 10%				C10V6C			10TCC-V56
C203	10		NPO-DI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C204	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C205	1000		EF-001	MFT-1000		CCF-102	CT280A	
C206								
C207	100		EF-0001	MFT-100				
C208	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C209								
C210	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C211	30							
C212	1000		EF-001	MFT-1000		CCF-102	CT280A	
C213	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C214	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C215	1000		EF-001	MFT-1000		CCF-102	CT280A	
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C219	1000		EF-001	MFT-1000		CCF-102	CT280A	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

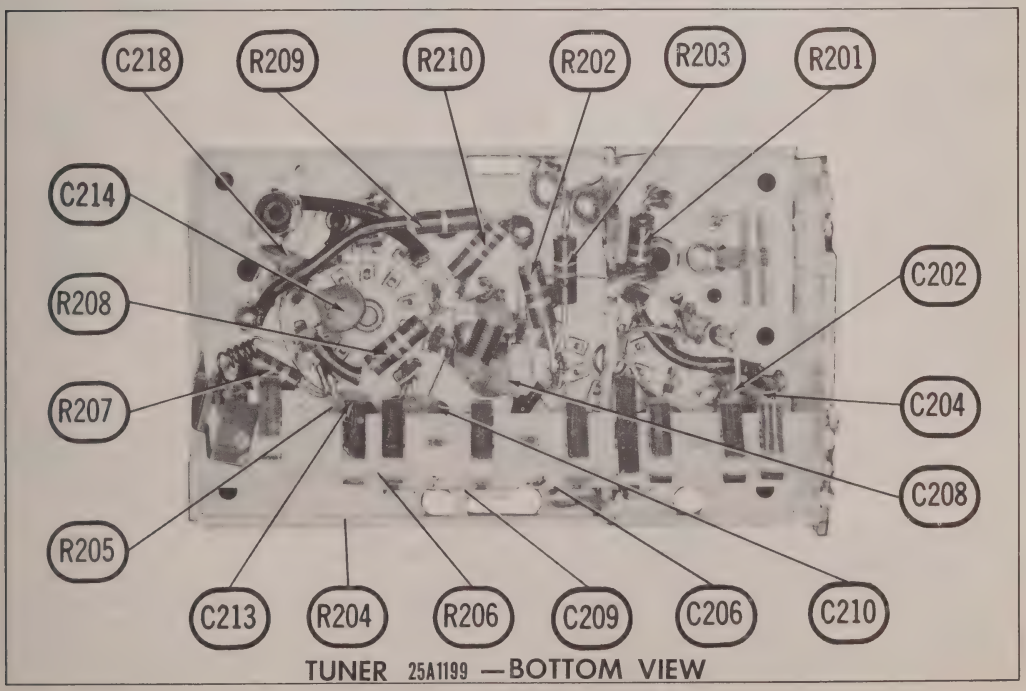
ITEM No.	RATING	REMARKS
R201	10K	
R202	10K	
R203	22K	
R204	22K	

ITEM No.	RATING	REMARKS
R205	220K	
R206	10K	
R207	15K	
R208	10K	

ITEM No.	RATING	REMARKS
R209	2200Ω	
R210	47K	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA
K201	Antenna Filter			



TUNER 25A1199 —BOTTOM VIEW

SET 504 FOLDER 1

AIRLINE MODELS WG-4600A, 01A, 06A, 11A, WG-4700A, 01A, 06A, 11A, WG-5202A, 04A, 06A, 07A, 08A, 12A, 17A, WG-5302A, 04A, 06A, 07A, 08A, 12A, 17A

FOLDER 1

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	GENERAL ELECTRIC * USE	TYPE	ITEM No	RAYTHEON * USE	TYPE	ITEM No	SYLVANIA * USE	TYPE
V1	1st Video - IF Amp	3DK3	V5	Vert. Multi. - Vert. Output	6SU7	V9	Horiz. Output	12DQ8
V2	2nd Video - IF Amp	3DK3	V6	Horiz. AFC - Horiz. Osc.	6CQ7	V10	Damper	12AX4GTA
V3	Video - Output	6BQ5	V7	Horiz. Output	12DQ8	V11	RF Rectifier	1N3GT
V4	Audi. Det	3BN6	V8	Damper	12AX4GTA			
V5	Audio - Output	6BQ5	V11	RF Rectifier	1N3GT			
V6	Sync Sep. - Sync Amp	6CQ7						

PICTURE TUBE

ITEM No	REPLACEMENT DATA: ABLINE PART No.	GENERAL ELECTRIC	RCA	RAYTHEON PART No.	SYLVANIA	NOTES
V12	21CEP4A 23YP4	21CEP4A	21CEP4A	21CEP4A/RC21CEP4A	21CEP4A/RC21CEP4A	① Aluminized ② Silver Screen "HS"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	VOLT	REPLACEMENT DATA: ABLINE PART No.	ALLEN D. MAGNUM	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	140	150	AF5S-23	5AG181	FP1T	TMG-1756	FP533.15	TVL-1455	
C2A	125	300	AF5H-03-60	XC0732.2	FP533.15	TMG-4646	FP533.15	TVL2-3574.3*	
B	20	350							
C	20	50							
C3A	125	350	45X467	D0046	FP536.75	TMT-3810	FP536.75	TVL2-3574.5*	
B	40	300							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.047 200V		P388N-047	DD-533	CUB2S47	4DP-3-472	GEM-4147	2TM-S47
C5	68 NPO 5%		DTE-68	CDQ6S6C	CDC5-680	CMD-688	10TCC-Q68	
C6	270 10%		DI-271	DD-271	L2S271	GP247	10TS-1Z7	
C7	1000		BPD-001	DD-102	BYA10X	CCD-102	B-102	5HK-D10
C8	100		DI-101	DD-101	L2F7J0	CCD-101	B-100	10TS-T10
C9	470 10%		DI-471	DD-471	SR5T47	CCD-471	GP347	10TS-T47
C10	1000		BPD-001	DD-102	BYA10X	CCD-102	B-102	10TS-D10
C11	1000 10%		DI-1002	DD-102	P3E2X	CCD-102	GP310	10TS-D10
C12	.047 300V		P388N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C13	.047 300V		P388N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C14	1000		BPD-001	DD-103	BYA10X	CCD-103	B-103	5HK-D10
C15	20 NPO 10%		P458N-01	DF-094	CUB4P1	4DP-3-204	GEM-4011	4TM-P05
C16	1		Y94C2S3-10%		CUB1S5	4DP-3-333	GEM-4113	6TM-S10
C17	.047 1000V		P568A-047		CUB3S47	16DP-3-473	GEM-4043	10TM-S47
C18	3.3 10%		NPO-3R3	TCZ-3R3	CM7S3C	CCD-3R3	CMD-533	10TCC-Y33
C19A	1000		BPD-2X001	DD3-102	BYD001X	CCD-102	B2X102	5HK-E102
B	1000					CCD-102		
C21	5000		BPD-005	FF-502	BYA10X5	CCD-502	B-250	5HK-D50
C22	10	N330 10%						
C23	.0047 600V		P688N-0047	DS-473	CUB6D47	6DP-3-472	GEM-4347	6TM-D47
C24	.005		BPD-005	DD-502	BYA10X5	CCD-502	B-250	5HK-D50
C25	.047 630V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C26	.047 400V		P488-0047	DC-473	CUB4D47	4DP-3-473	GEM-4247	4TM-D47
C27	.0047 400V 10%		V84A4D47-10%		PM6D47	6DP-4-472	GEM-4347	6TM-D47
C28	1000		BPD-001	DD-103	BYA10X	CCD-103	B-103	5HK-D10
C29	1000		BPD-001	DD-103	BYA10X	CCD-103	B-103	5HK-D10
C30	68	500V	P688N-033	DD-303	CUB6D33	6DP-3-333	GEM-4133	6TM-S33
C31	1	600V	P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-401	6TM-P10
C32	1	400V	P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-4011	4TM-P10
C33	15	10%	1689-0001S	TCZ-15	2BR5Q15	CM-15B-103C	CMD-4S	MS-4S
C34	68	10%	1689-0003S	TCZ-68	2BR5Q33	CM-15B-830C	CMD-4S2	MS-4S2
C35	330	10%	1689-0001	TCZ-330	2BR5Q31	CM-15B-101K	MCS-25	MS-3S0
C36	.047 200V		P388N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C37	.033 300V		P388N-033	DD-333	CUB2S33	4DP-3-333	GEM-4133	2TM-S33
C38	.47 300V		P388N-47		CUB2P47	2DP-5-474	GEM-4047	2TM-P47
C39	.01	TCZ-10	1689-0003Z	TCZ-10	CM-15B-223K	MCS-25	MS-3S2	
C40	.047	400V	P488N-01	DE-103	CUB4S	4DP-3-123	GEM-411	4TM-S20
C41	820	10%	1689-0008S	PL #7AZ8	CM-15B-821K	MCM45	MS-3S2	
C42	170-760		469					
C43	.001	1000V	BPD-001	DD-102	BYA10X	CCD-102	B-102	5HK-D10
C44	.047	400V	P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C45	.22	400V	P488N-25		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C46	39	500V 10%					61T-439	
C47A	1000					CCD-102		
B	1000		BPD-2X001	DD3-102	BYD001X	CCD-102	B2X102	5HK-E102
C48	.22	400V	P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C49	10000	1400V Note 1	DAC-37	D2S6-103	JEVF10S	16DP-3-103	UAC-120	B1L-S10
C50	1000		BPD-001	DD-102	BYA10X	CCD-102	B-102	5HK-D10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1: Some versions use component combination (Pt. #7KX10) for C49 & R63.

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: ABLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5000		TEX30	F1-1	(RTV-720	(QU-1074	*(UE3E895	Contrast
B	1meg			R2-51	KR-4			Volume
C	5000			R3-51				Power Off-On
R2A	250K		40X422	B-39	A47-500K-S	QU-153	TA53L	Brightness
B	500K			Not Reg.	F3-2	Not Reg.	Not Reg.	
R3	2meg *		40X486	B-46	A47-S00K-S	QU-139	U43	Range (AGC)
R4A	250K		40X484	Not Reg.	F3-3	Not Reg.	Not Reg.	Vert. Hold
B	Shaft							

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R5	500Ω	2(W)	40X472					
R6A	15000	3	40X494-3	TT-511	B47-1500-S	B01-108	PTA15L	Vert. Linearity
B	Shaft			Not Reg.	Not Reg.	Not Reg.	Not Reg.	
R7	2.5meg		40X486-3 ②	TT-S3	B47-2.5meg-4	HLC3	SU-585	Height

① Used in 21" Models. 22" Models use 500K Brightness (Pt. #40X482).
② Used in 22" Models. 23" Models use Vrng Range Control (Pt. #4UX483).
③ Used in 23" Models. 23" Models use 5meg Height (Pt. 40X48).
† "CONCENTRIKIT" Equivalent: K-3 Kit with Base Elements & Shafts: B11-105, P6-103 (Panel); B11-137, R1-136 (Rear) (Switch)
76-1

* "RTA-LOC" Equivalent: FA75L1, RU16L, CF113A, UE87S, US-4L.
* Element open at low end.

ITEM No	REPLACEMENT DATA: ABLINE PART No.	ALLEN D. MAGNUM	MERIT	RAM	ROGERS PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.
T1	Vert. Output	RLX307-1A	A-3855	V-307	V-26 ②	WO-108	26S73 ①	A-142X ③
T2	All. Vert. Output	RLX307			MO-8 ④		Y-45 ⑤	Y-45 ⑥
	(90°) Vert. (38MM)	YA34S1C ⑦						NWI ④
	Yoke	5A34S82 ⑦						YC-12
	Rear Cover and Centering Device	5A435						
	Yoke Clamp	3GX81						
	Rubber Strip (For Yoke Clamp)	8X347						
T3	Horiz. Output	5XX389	RVO-174					

① Drill new mounting hole(s).
② Connect as autotransformer.
③ Cut and tape red and black lead.
④ Connect same as original.
⑤ Remove jumper from across terminals #3 & #5; connect yoke terminal #1 to plug pin #4; terminals #2 & #7 to plug pin #3; terminal #3 to plug pin #2; terminal #6 to plug pin #1; terminal #4 to plug pin #5.
⑥ Used in 21" Models.
⑦ Used in 23" Models.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	3.3meg	
R8	10K	
R10	680Ω	
R11	56Ω	
R13	22K	
R14	470Ω	
R15	15meg	
R16	8500Ω	
R17	68Ω	
R18	2600Ω 4W	Pt. #43X331 (IRC HPW5-2600Ω)
R19	33K	
R20	68Ω	
R21	180K	
R22	100K	
R23	15K	
R24	15K	
R25	10meg	
R26	100K	
R27	470Ω 1W	

ITEM No.	RATING	REMARKS
R28	100Ω	
R29	470Ω 1W	(330Ω) *
R30	1500 1W	
R31	2.5meg	
R32	1.5meg	
R33	560K	
R34	47K	
R35	6800Ω	
R36	4700Ω	
R37	68K	
R38	56K 1W	
R39	56K 1W	
R40	2.7meg	(2.2meg) †
R41	1.8meg	
R43	180Ω	
R43	10000 1W	
R44	560Ω	
R45	560Ω	
R46	220K	
R47	330K	
R48	820K	

ITEM No.	RATING	REMARKS
R49	82K	
R50	270K	
R51	68K	
R52	3600Ω	
R53	22K	
R54	10K	
R55	220K	
R56	56K	
R57	68Ω	
R58	82Ω	
R59	1meg	
R60	10K 4W	Pt. #43X351
R61	25000 10W	Pt. #43X391 (IRC 4PW10-25000Ω)
R63	7.5Ω	Pt. #43X397 ① (IRC 4PR 7.5Ω)
R63	470K	
R64	2500Ω	
R65	52Ω 20W	Pt. #43X304

† Alternate Value. 23" Models use 1 5meg in this application.
* Family Type.
① Some versions use component combination (Pt. #6T13) for R53 & C49.

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA
K2	Volume Comp.	1000mmf, 5000mmf, 8800, 330K	7EX10A ①	① Alternate Pt #7EX16
K3	Sync Sep. Grid	150mmf, 270K	7EX15	
K3	Vert Integrator	2000mmf, 100K, 100K	7EX19	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Stancor PART No.	NOTES
L2	Antenna Trans.	9A3417					
L2A	1st Video IF	9A3438					
B	41.25MC Trap	9A3439					
L4	2nd Video IF	9A3444					
L4A	3rd Video IF	9A3435 ①					
B	Series Peaking Coil						
L5	Series Peaking Coil	9A3375	TV-180	6178	VP-1	RTC-8593	30uh
L6	Shunt Peaking Coil	36A33 ②	TV-189 a	6155 a	VP-5 a	RTC-8587 a	280uh
L7	4.5MC Trap	9A3436	TV-151	1469	VP-3	RTC-8852	" "
L8	Shunt Peaking Coil	36A37	TV-200	6132	VP-7	RTC-8577	325uh
L9	Series Peaking Coil	36A45 ③	TV-188 *	6130 *	VP-8 *	RTC-8576 *	270uh
L10	Sound IF	9A3434	TV-154	1470-A		RTC-8604	
L11	Quadrature Coil	9A3437	TV-153	1480		RTC-8605	L Sub
L12	RF Choke	9A2380	RC-562	4604	VP-9	RTC-8616	

① Includes Assembly.
② Wound on 22K Resistor.
③ Wound on 6800Ω Resistor.

* Parallel with 22K Resistor.
* Parallel with 5600Ω Resistor.

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L23	Horiz. Osc. Coil	9A3466 ①	TV-186	6131			RTC-8632	HS-7	
L24	Horiz. Waveform	9A3373	MWC-12	6315	302R10	QRC104	RTC-8638	HS-8	WLC-3
	Horiz. Osc. Coil	9A3445 ②							

① Used in 21" Models.
② Used in 23" Models.

FILTER CHOKE

ITEM No	RATINGS: CURRENT (Measured)	DC RES	INDUCTANCE (@ CURRENT)	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L25	.340A	50Ω	1 Hy. (300V DC)	53X356-11	C-2591 ①	F-801 ①	C-2343	26C44	C-34X	

① Drill new mounting hole(s).

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	RCA PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	Vert. Output	RLX307-1A	A-3855	V-307 ①	VO-26 ②	WO-108	26S73 ①	A-142X ③
T2	All. Vert. Output	RLX307					Y-45 ⑤	Y-45 ⑥
	(90°) Vert. (38MM)	YA34S1C ⑦		MO-8 ④				NWI ④
	Yoke	5A34S82 ⑦						YC-12
	Rear Cover and Centering Device	5A435						
	Yoke Clamp	3GX81						
	Rubber Strip (For Yoke Clamp)	8X347						
T3	Horiz. Output	5XX389	RVO-174					

① Drill new mounting hole(s).
② Connect as autotransformer.
③ Cut and tape red and black lead.
④ Connect same as original.
⑤ Remove jumper from across terminals #3 & #5; connect yoke terminal #1 to plug pin #4; terminals #2 & #7 to plug pin #3; terminal #3 to plug pin #2; terminal #6 to plug pin #1; terminal #4 to plug pin #5.
⑥ Used in 21" Models.
⑦ Used in 23" Models.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI	SEC	REPLACEMENT DATA: AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	5000Ω	3-4Ω	5LX306A ①	A-3026	AU-601	A-3877	24S49	S-4EX ① Alternate Pt. #5LX206

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: AIRLINE PART No.	GUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	12A560	4A07	

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: AIRLINE PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M3	.340A	66X23	RUS04	1N1763	F6	SR500	Silicon
M3	.340A	66X23	RUS04	1N1763	F6	SR500	Silicon

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: AIRLINE PART No.	RAYTHEON PART No	SYLVANIA PART No.	NOTES
M3	1N60		1N60	1N60	Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M4	Tuner	25AH99	VHF with UHF Provisions, Used in 21" Models, STANDARD COIL REPLACEMENT For RKGD-4321A
	Tuner	25AH92	VHF with UHF Provisions, Used in 23" Models
M5	Tuner	25AH85-1	UHF
	Antenna	9A3460-2	JFD REPLACEMENT Type #TA400
	Magnet	2A478	Beam Aligner

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	17X203-1	Tinted, Model WG-4600A Only
Mask	S-38A434	VHF, Model WG-4600A Only
Mask	S-38A1479	UHF/VHF, Model WG-4600A Only
Knob	19A979-1	Channel Selector, Model WG-4600A Only
Knob	19A989-1	UHF Channel Indicator
Knob	19A985-3	UHF Channel Selector
Knob	19A963-1	Fine Tuning, Model WG-4600A Only
Knob	19A832-1	Volume
Knob	19A975-1	Brightness, Vertical Hold, Range, Model WG-4600A Only
Knob	19A833-1	Contrast
Knob	19A1005-1	Channel Selector
Knob	19A1001-2	Fine Tuning
Knob	19A1006-1	Brightness, Vertical Hold
Knob	19A1016-1	Horizontal Hold
Knob	19A1015-2	Range

WIRING DATA

High Voltage Lead	Use BELDEN No. 8959
Shielded Hook-up Wire	Use BELDEN No. 8886 (Single Conductor) 8716 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8404 (Tin) or 8494 (Round) - 4 Conductor 8486 (Round) - 5 Conductor 8498 (Round) - 8 Conductor

AIRLINE MODELS WG-4600A, 01A, 06A, 17A, WG-4700A, 01A, 06A, 18A, WG-5302A, 04A, 06A, 07A, 08A, 12A, 17A, WG-5302A, 04A, 06A, 07A, 08A, 12A, 17A

FOLDER 1

TUNER PARTS LIST AND DESCRIPTIONS

25A1192

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	2CY5	V202	Mixer - Osc.	5CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C202	5.6 10%							10TCC-V5.6
C203	10 NPO		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C204	1000		EF-001	MFT-1000		CCF-102	CT280A	
C205	1000		EF-001	MFT-1000		CCF-102	CT280A	
C206	100		EF-0001	MFT-100				
C207	30							
C208	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C209	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C210	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C211	1000		EF-001	MFT-1000		CCF-102	CT280A	
C212	1000		EF-001	MFT-1000		CCF-102	CT280A	
C213	1000		EF-001	MFT-1000		CCF-102	CT280A	
C214	1000		EF-001	MFT-1000		CCF-102	CT280A	
C215	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	24 10%		NPO-SI 24	TCZ-24	C10Q24C	CCTO-240	CNO-427	10TCC-Q25
C218	10 10%		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

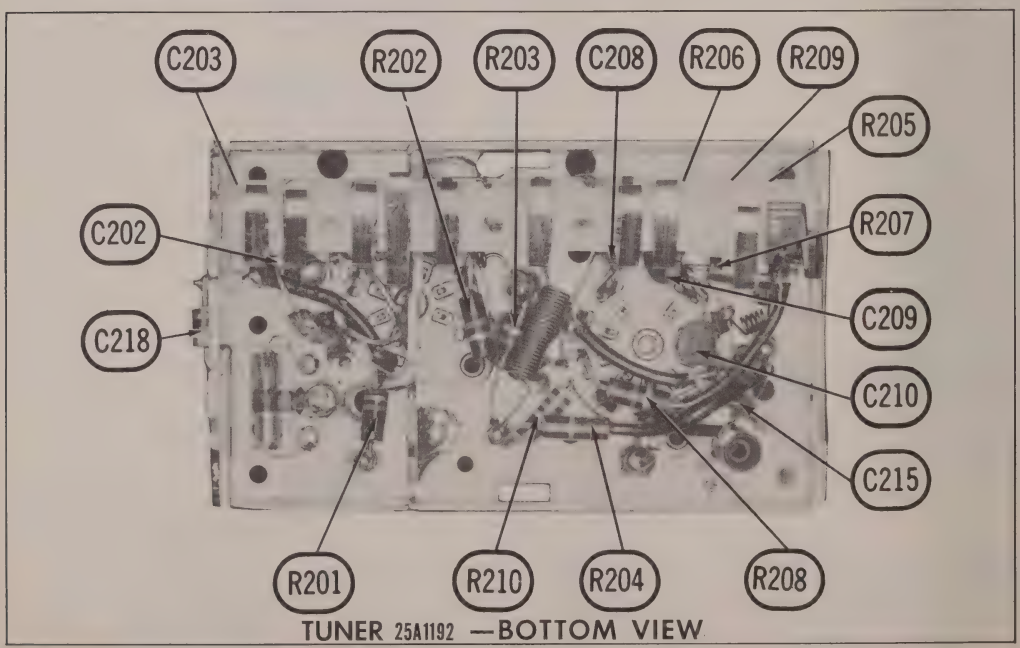
ITEM No.	RATING	REMARKS
R201	10K	
R202	22K	
R203	10K	
R204	2200Ω	

ITEM No.	RATING	REMARKS
R205	220K	
R206	10K	
R207	15K	
R208	10K	

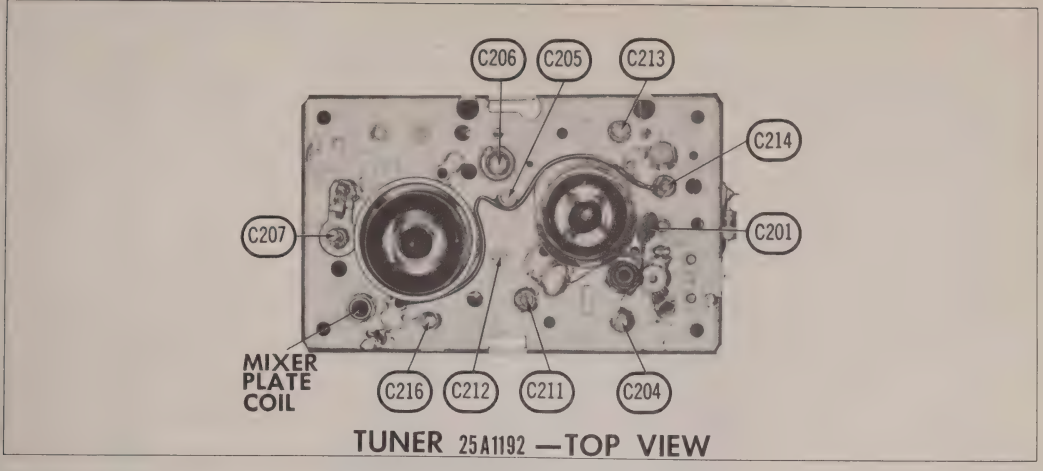
ITEM No.	RATING	REMARKS
R209	22K	
R210	47K	

COMPONENT COMBINATIONS

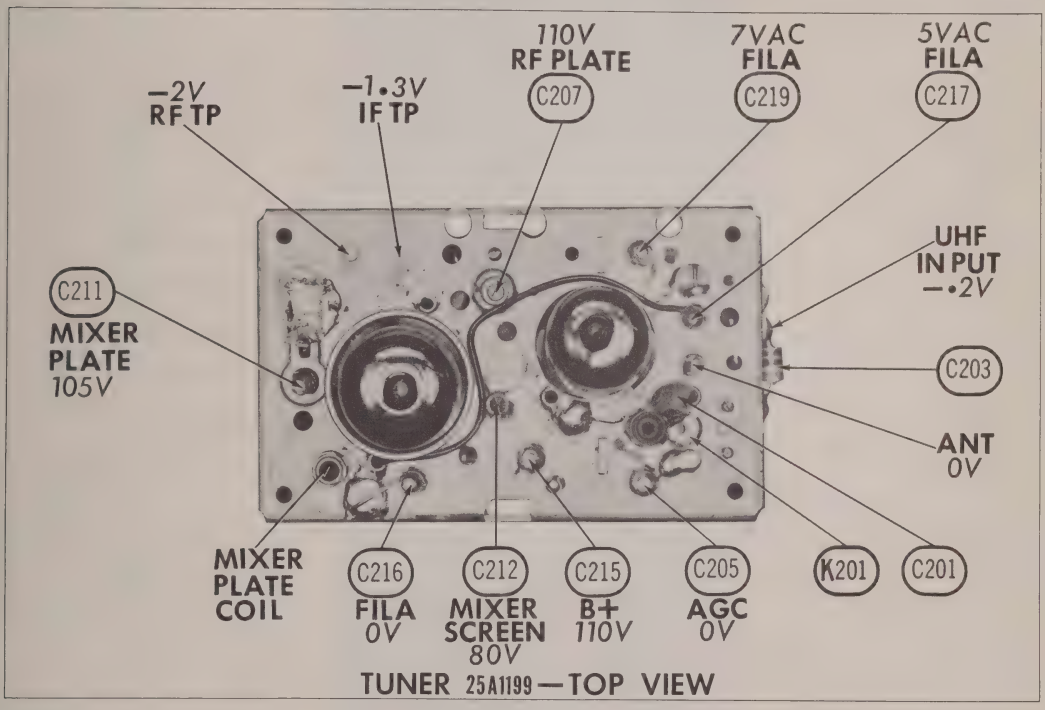
ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA
K201	VHF Antenna Filter			



TUNER 25A1192 —BOTTOM VIEW



TUNER 25A1192 — TOP VIEW



TUNER 25A1199 — TOP VIEW

TUNER ALIGNMENT INSTRUCTIONS

TUNER ALIGNMENT

Suggested Alignment Tools: GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

VHF OSCILLATOR ALIGNMENT

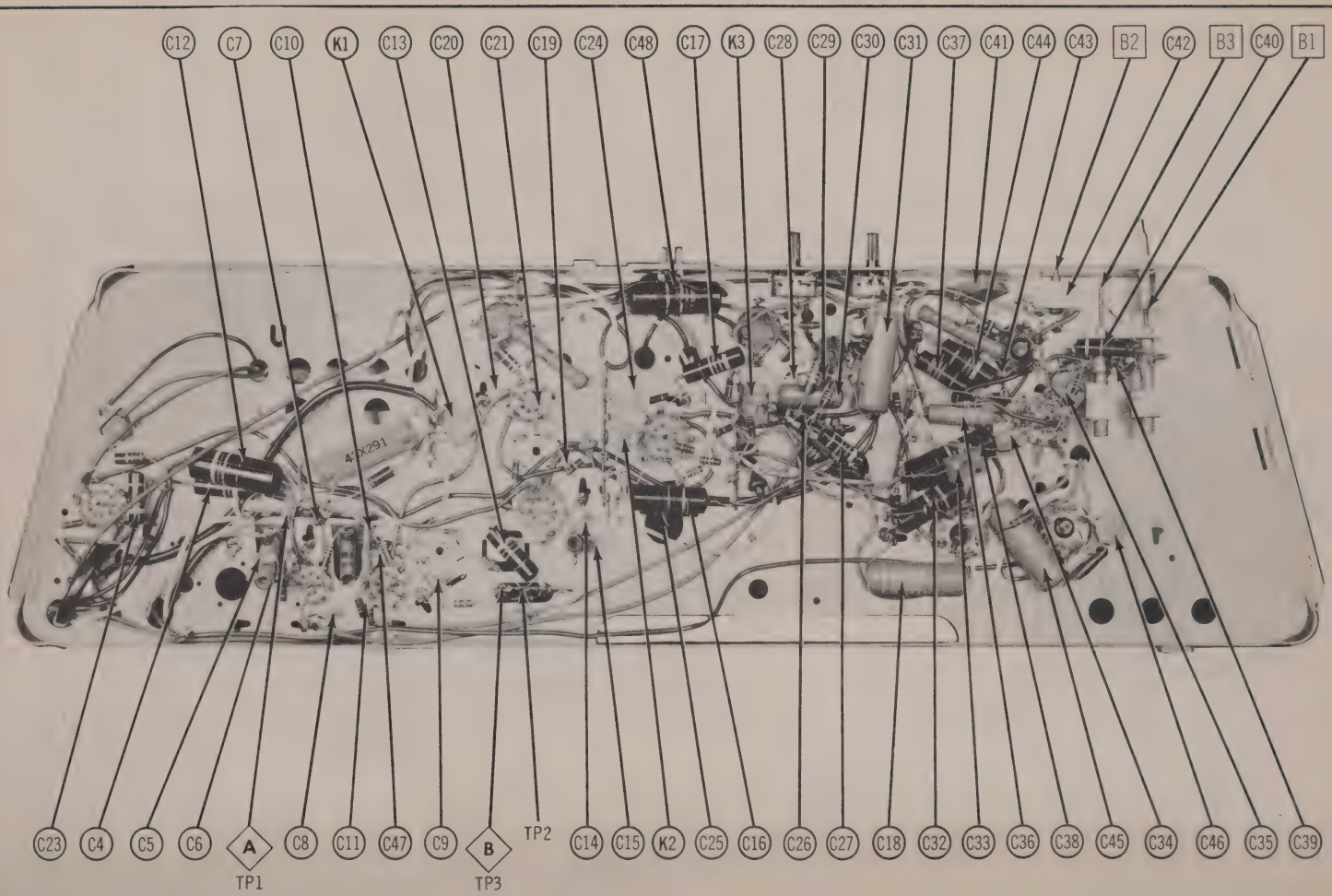
The individual channel adjustment screws are accessible one at a time, thru a hole in the front of the tuner, as the Channel Selector is rotated. Set the Fine Tuning to the center of its range and switch to channel to be adjusted and adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

UHF TUNER ALIGNMENT

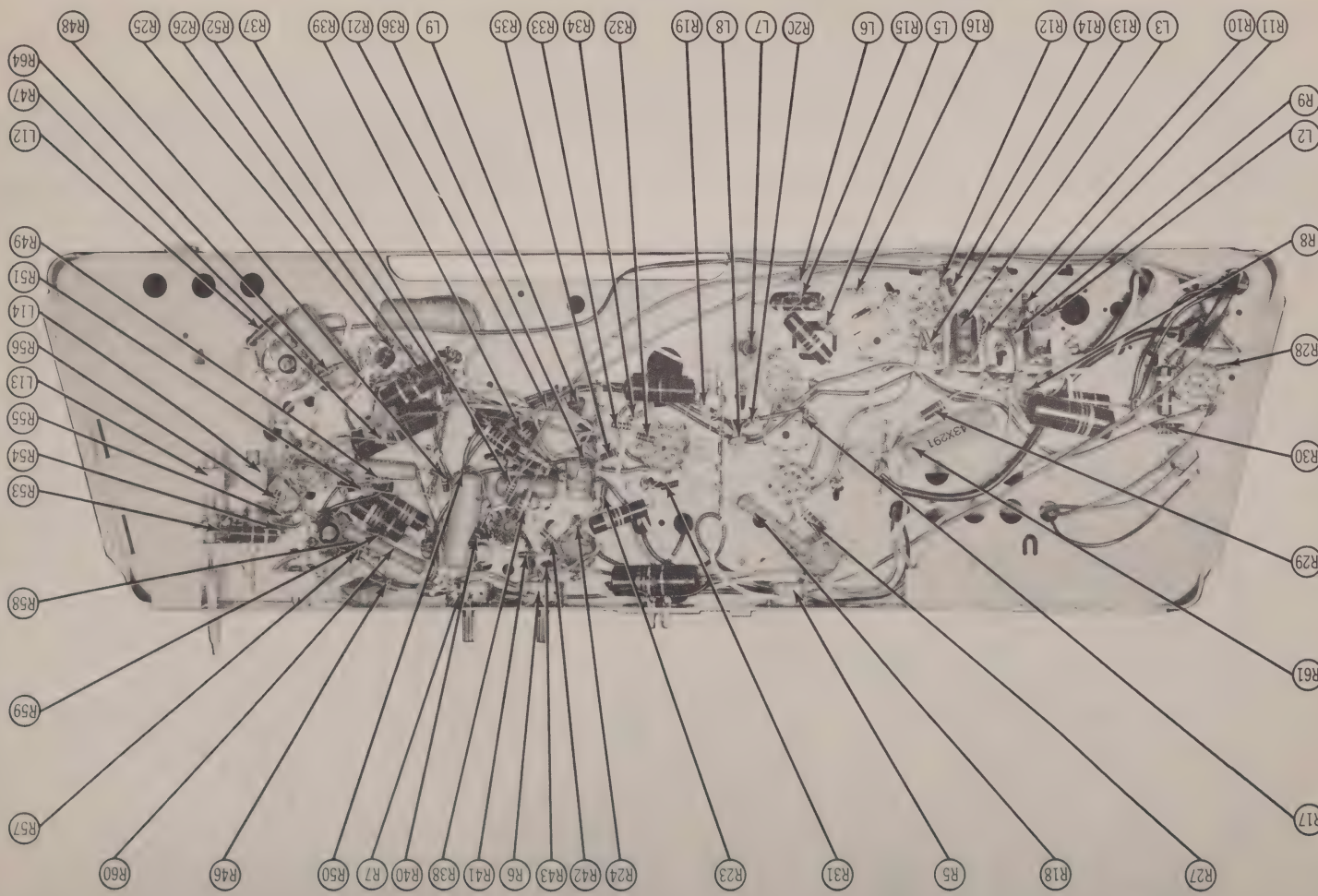
This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.



TP1	-.2V	IF AGC
TP2	-.3V	VIDEO DET OUTPUT
TP3	-.3V	VIDEO AGC

CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.

CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.

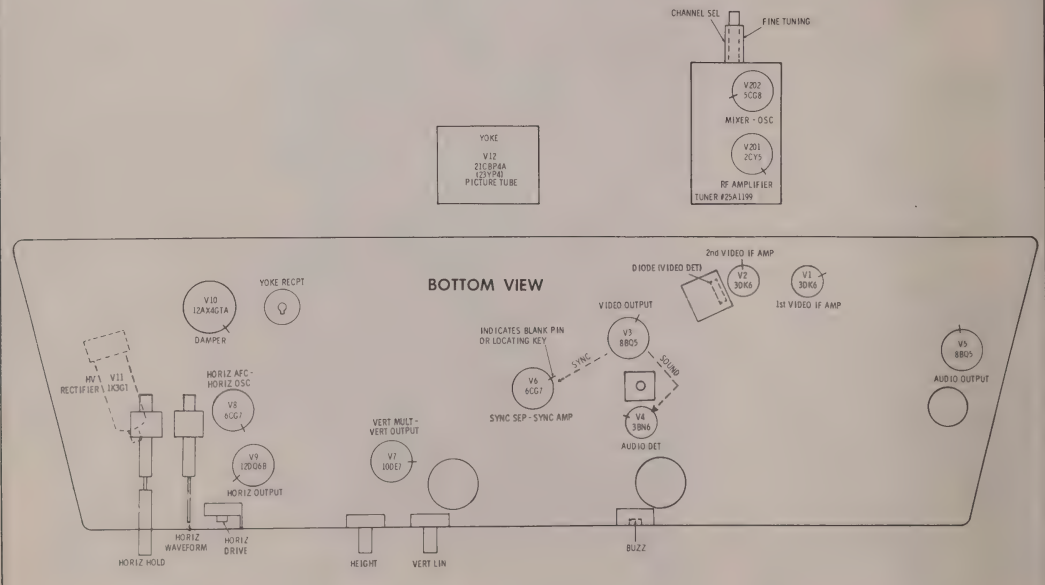


RESISTANCE MEASUREMENTS

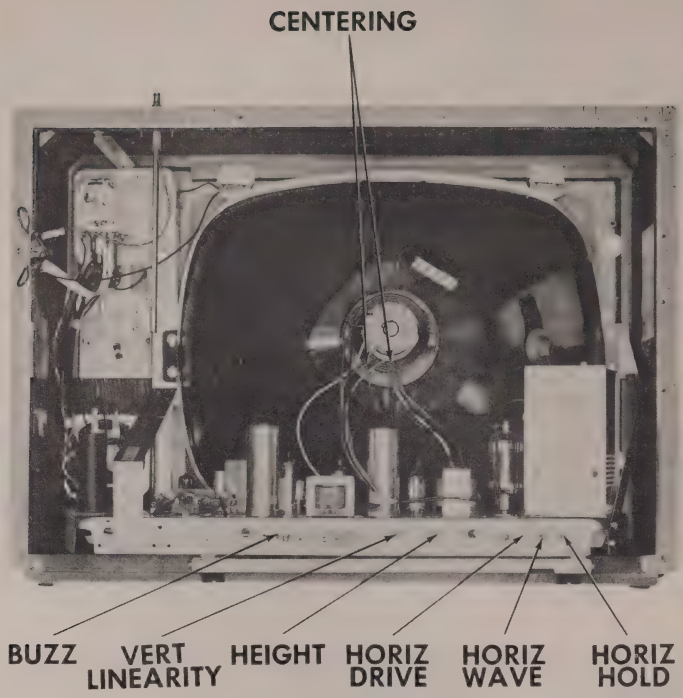
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3DK6	• 1meg	56Ω	90Ω	85Ω	†3000Ω	†3000Ω	0Ω		
V2	3DK6	0Ω	150Ω	85Ω	80Ω	†3000Ω	†3000Ω	0Ω		
V3	8BQ5	NC	1meg	• 80Ω	140Ω	125Ω	NC	†3600Ω	NC	†2550Ω
V4	3BN6	• 250Ω	6Ω	75Ω	80Ω	†7200Ω	7Ω	†330K		
V5	8BQ5	• 100Ω	NC	150Ω	155Ω	140Ω	NC	†890Ω	NC	†520Ω
V6	6CG7	†1.5meg	2.2meg	0Ω	115Ω	125Ω	†12K	47K	0Ω	0Ω
V7	10DE7	465Ω	NC	1.5meg	90Ω	115Ω	•†3.8meg	• 180K	0Ω	• 2000Ω
V8	6CG7	†56K	340K	0Ω	45Ω	35Ω	†50Ω	1.4meg	350K	0Ω
V9	12DQ6B	TP	50Ω	TP	ǂ95K	1meg	TP	75Ω	0Ω	TOP CAP ǂ8Ω
V10	12AX4GTA	TP	NC	¶	NC	†50Ω	TP	15Ω	35Ω	
V11	1K3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ǂ410Ω
V12	21CBP4A	50Ω	• 32K	Pin 6 †100K	Pin 10 ǂ10meg	Pin 11 • 200K	Pin 12 45Ω			
V201	2CY5	• 1.9meg	0Ω	10Ω	15Ω	†2500Ω	†9K	0Ω		
V202	5CG8	15K	†10K	0Ω	10Ω	0Ω	†4700Ω	†18K	0Ω	240K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
ǂ MEASURED FROM PIN 3 OF V10.

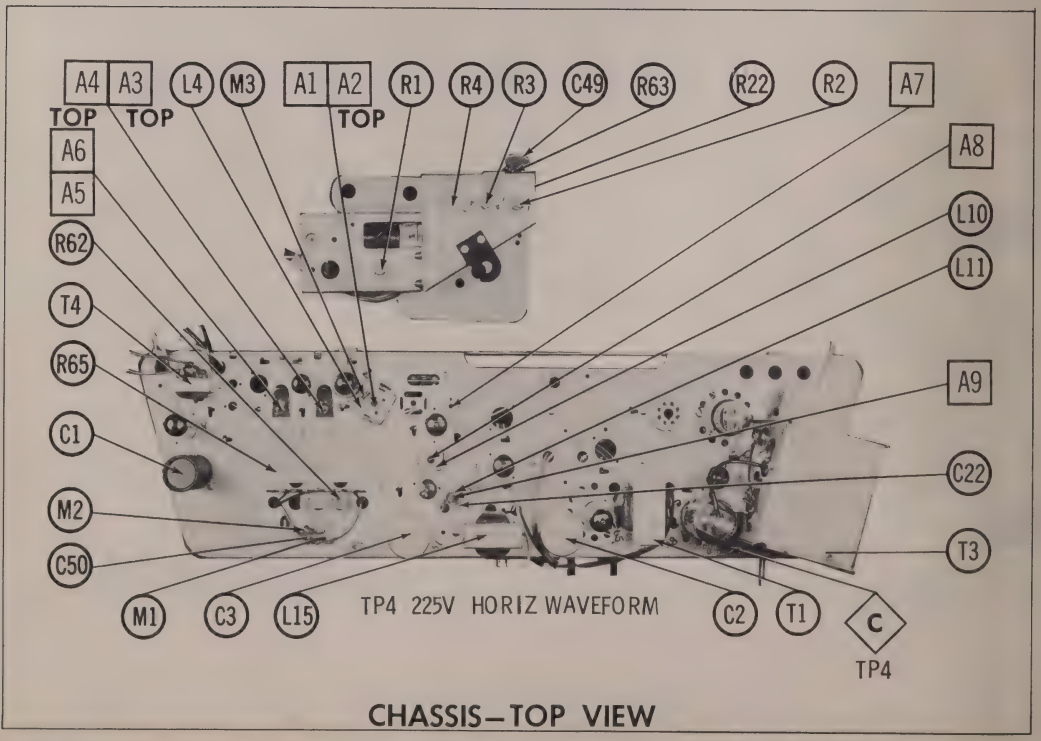
NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW



CHASSIS—TOP VIEW

PHOTOFACT® Folder with CIRCUITRACE®

**MOTOROLA CHASSIS
RTS-433Y, RTS-433**

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MOTOROLA CHASSIS
RTS-433Y, RTS-433

MODEL 17P6-1A (CH. RTS-433)

MOTOROLA CHASSIS
RTS-433Y, RTS-433

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

DISASSEMBLY INSTRUCTIONS

WRAPAROUND COVER REMOVAL MODEL 17P6-1A

NOTE: Printed Board may be serviced, without removing wraparound cover, by removing rear cover and 3 screws holding brace on printed board. By pulling springs (one on each side), printed board can be moved part way out.

1. Remove 4 metal screws holding rear cover. Remove rear cover.
2. Remove 3 knobs at top and 2 at side of cabinet.
3. Remove 6 metal screws at bottom of cabinet holding wraparound cover.
4. Remove 2 screws below handle.
5. Remove wraparound cover.

PICTURE TUBE REMOVAL

1. See "Wraparound Cover Removal" steps 1 through 5.
2. Remove 4 bolts holding front mask. Lift frame from picture tube.
3. Remove picture tube socket, yoke plug, and high voltage lead.
4. Remove 4 screws (2 on each side) holding picture tube mounting.

MODEL 17P6-1A (CH. RTS-433)

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

TRADE NAME	MOTOROLA	MODELS	CHASSIS
		17P6-1A, 17P6-2A, 17P6-3A, 17T37BR-A	RTS-433
		Y17P6-1A, Y17P6-2A, Y17P6-3A, Y17T37BR-A	RTS-433Y
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois		
TYPE SET	Television Receiver		
TUBES	VHF - Fifteen, UHF - Sixteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING	160 Watts, 1.5 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Follow steps 1 thru 5 of wraparound cover removal. Remove 4 bolts holding front mask. Lift frame from picture tube.

FUSE DEVICE

A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, it is necessary to remove the chassis. (See "Disassembly Instructions".)

FOCUS

The focus may be varied by connecting the lead from pin 4 of the picture tube to various voltage points. (For location, see photo "Printed Board - Top View".)

SYNC STABILITY

Sync stability may be varied by means of a Noise Gate Control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by a Horizontal Size Control. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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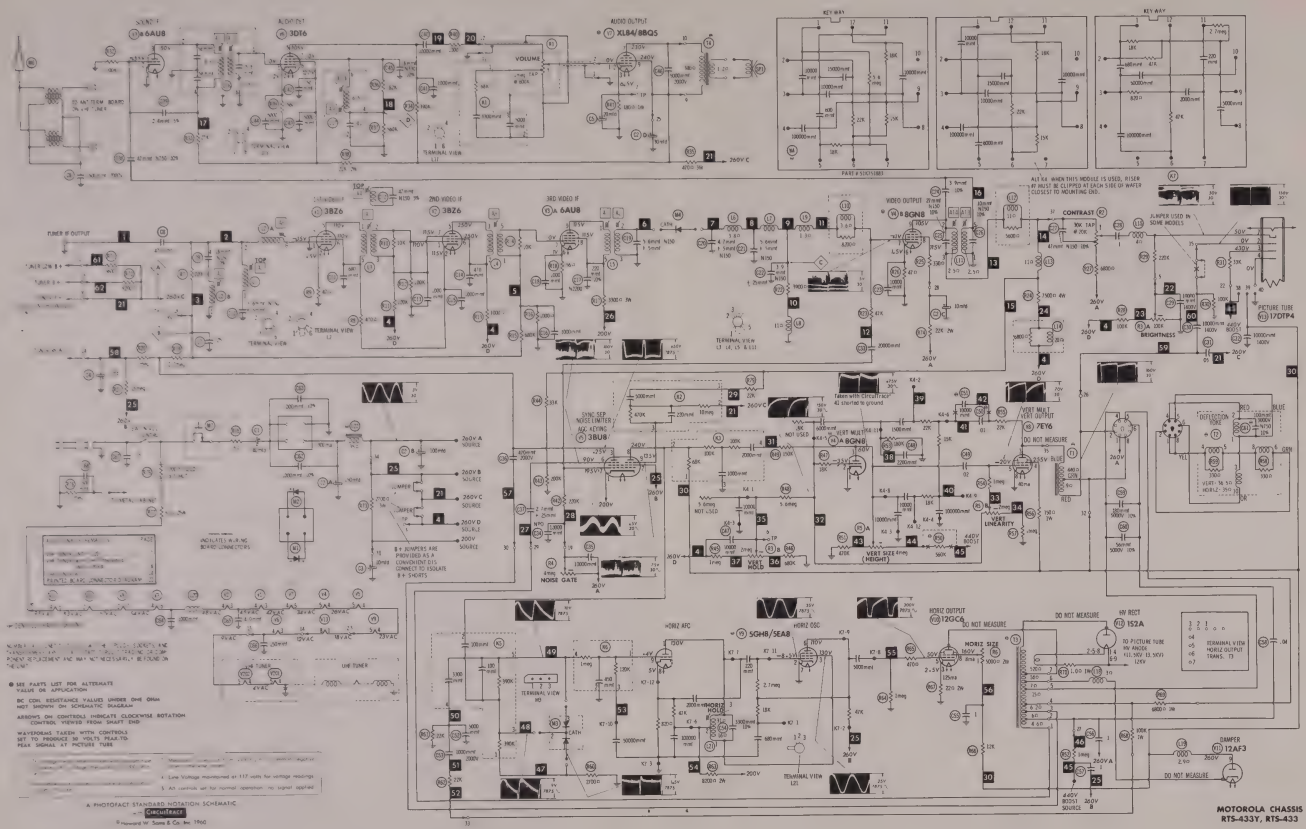
KA309

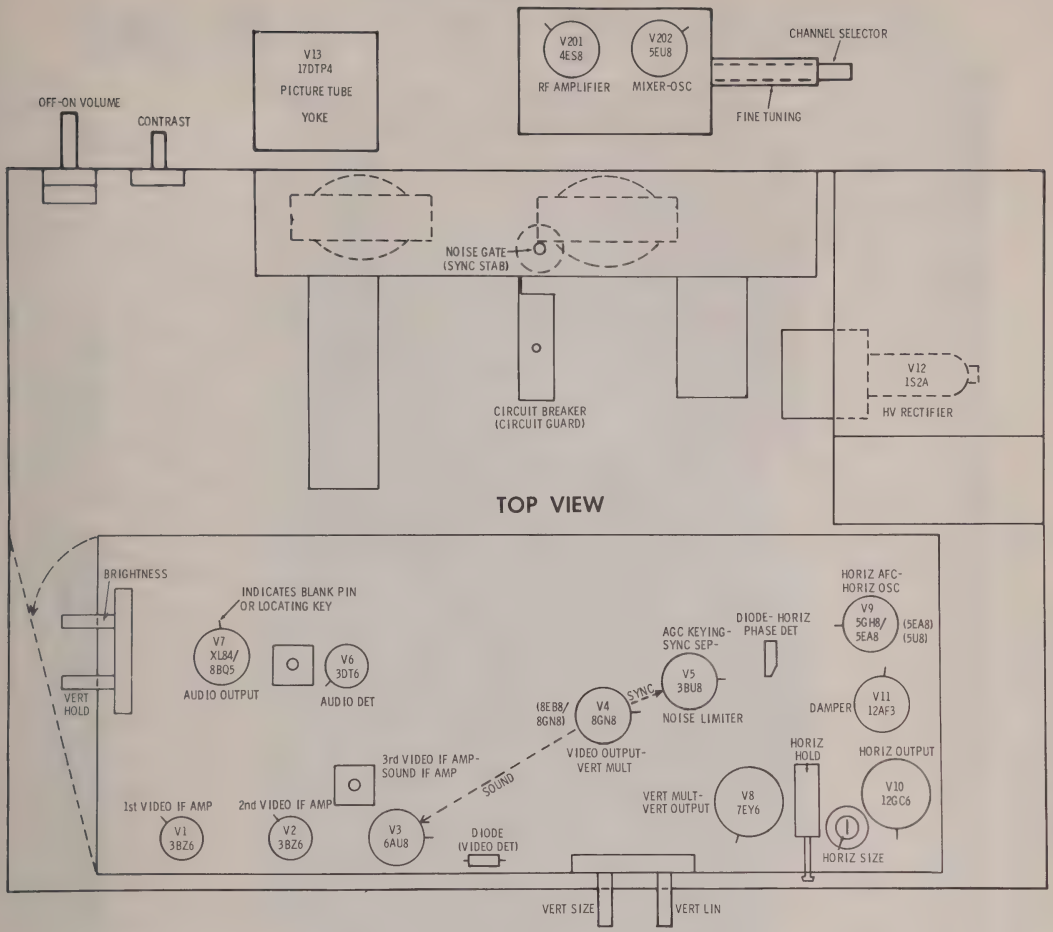
MOTOROLA CHASSIS
RTS-433Y, RTS-433

MOTOROLA CHASSIS
RTS-433Y, RTS-433

SET 504 FOLDER 2


MOTOROLA CHASSIS
RTS-433Y, RTS-433
MOTOROLA CHASSIS
RTS-433Y, RTS-433
A PHOTOFACT STANDARD NOTATION SCHEMATIC
CIRCLE-RADIO

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

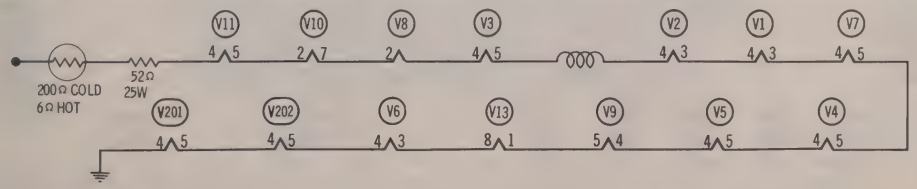
POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker, Rectifiers (B+)

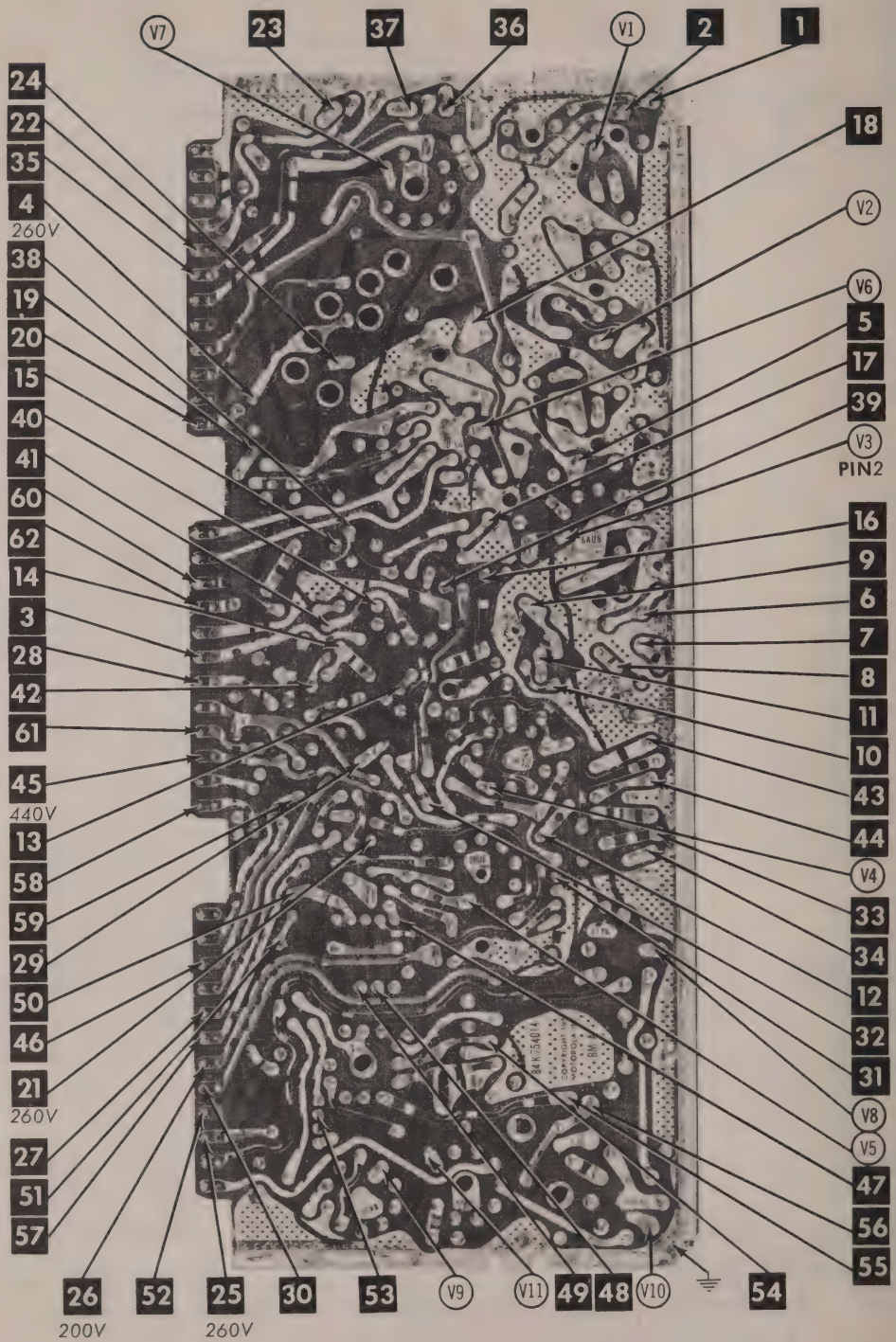
SWEEP FAILURE
No raster, has sound V9, V10, V11, V12, V13
No vertical deflection V4, V8
Poor vert. linearity or foldover V4, V8
Poor horiz. linearity or foldover V9, V10, V11
Narrow picture V9, V10, V11, Rectifiers (B+)
Vert. off freq. V4, V8
Horiz. off freq. Diodes (Horiz. AFC), V9

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V13
Has pic, no sound V3, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5, Diodes (Horiz. AFC)
No vert. or horiz. sync V9

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)

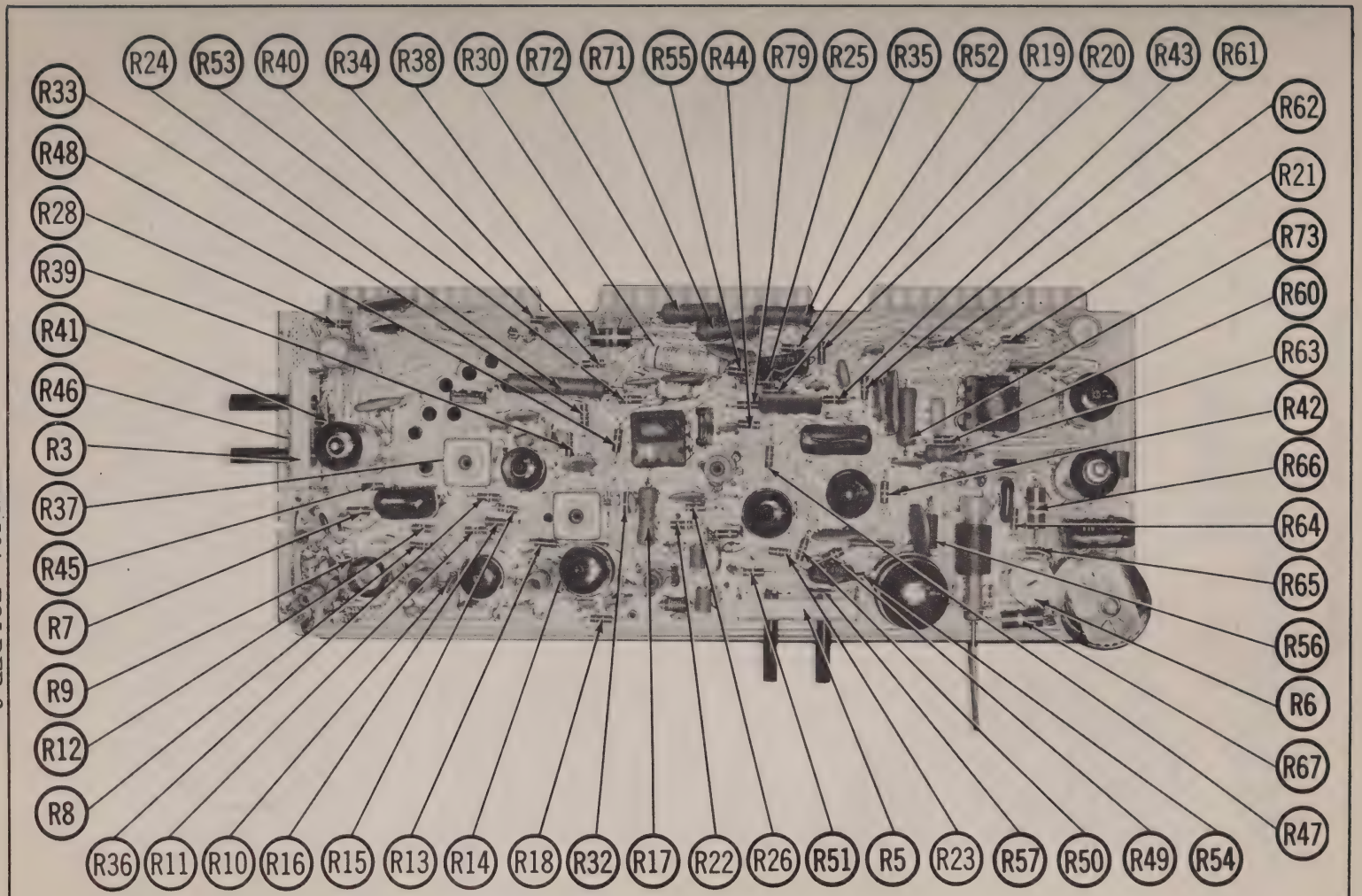




A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PRINTED BOARD - RESISTOR IDENT.

MOTOROLA CHASSIS
RTS-433Y, RTS-433

FOLDER 2

SET 504 FOLDER 2

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1 thru A14 ..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
Mixer Plate Coil ..... GENERAL CEMENT #9296, 9297
WALSCO #2546, 2547

VIDEO IF ALIGNMENT

Short the grid of the Tuner Oscillator to chassis. Remove the deflection yoke and connect a 1500 ohm 50 watt resistor from point Ⓐ to chassis. CAUTION: Point Ⓐ has B+ voltage on it. Set Contrast Control fully counterclockwise. Short the antenna terminals together but not to chassis.
Connect the negative lead of a 4.5 volt bias supply to point Ⓑ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .001mfd to pin 7 (grid) of 3rd Video IF. Low side to chassis.	44.0MC (10MC Swp.)	45.75MC	13	Vert Amp. thru 47K to point Ⓒ. Low side to chassis. (Across Video Det. load.)	A1, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
2.	Place a thin insulated metal strip between the Mixer-Osc. tube and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	47.25MC	"	"	A3, A4	Adjust to place marker in trap notch. (Slug away from chassis.)
3.	"	"	41.25MC	"	"	A5	"
4.	"	"	44.0MC	"	Vert. Amp. thru Demodulator probe to pin 5 (plate) of 1st Video IF Amp. Low side to chassis.	Mixer Plate Coil and A6	Set generator for 3 volts peak to peak on scope. Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. Mixer Plate Coil affects center peak and A6 affects outside peaks.
5.	"	"	42.25MC 45.75MC	"	Vert. Amp. thru 47K to point Ⓒ. Low side to chassis.	A7, A8	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. Adjust A7 to place 42.25MC marker at 50% and A8 to place 45.75MC marker at 30%. If necessary, retouch Mixer Plate Coil to correct for tilt.

SOUND IF ALIGNMENT

Tune in a strong TV signal and adjust controls for normal picture and sound. Connect the DC probe of VTVM to point Ⓓ. Common to chassis. Adjust A9 for maximum deflection choosing the one of the two peaks which produces the highest deflection on the meter. While listening to the sound, retouch A9 for maximum volume and MINIMUM distortion. A10 (which is the top slug in the Quadrature Coil) is a preset slug which is set near the top of the coil form and left there. Change to a very weak signal (this may be done by disconnecting the antenna lead from the antenna terminals and placing the leads nearby for loose coupling) that produces a hiss in the sound. Adjust A11 and A12 for maximum sound and MINIMUM distortion. Adjust A13 for maximum undistorted sound. If the sound is not clear at this point, repeat the entire procedure.

4.5MC TRAP ALIGNMENT

Tune in a strong TV signal and turn Contrast up. Adjust the Fine Tuning until a strong 4.5MC beat pattern is visible in the picture. Adjust A14 to find the two peaks at which the beat pattern is just noticeable. Tune the slug to the center of these two points. (Use MINIMUM inductance that will result in no apparent beat pattern.)

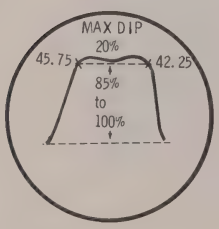


FIG.1

FIG.2

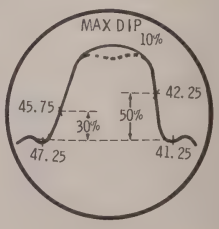
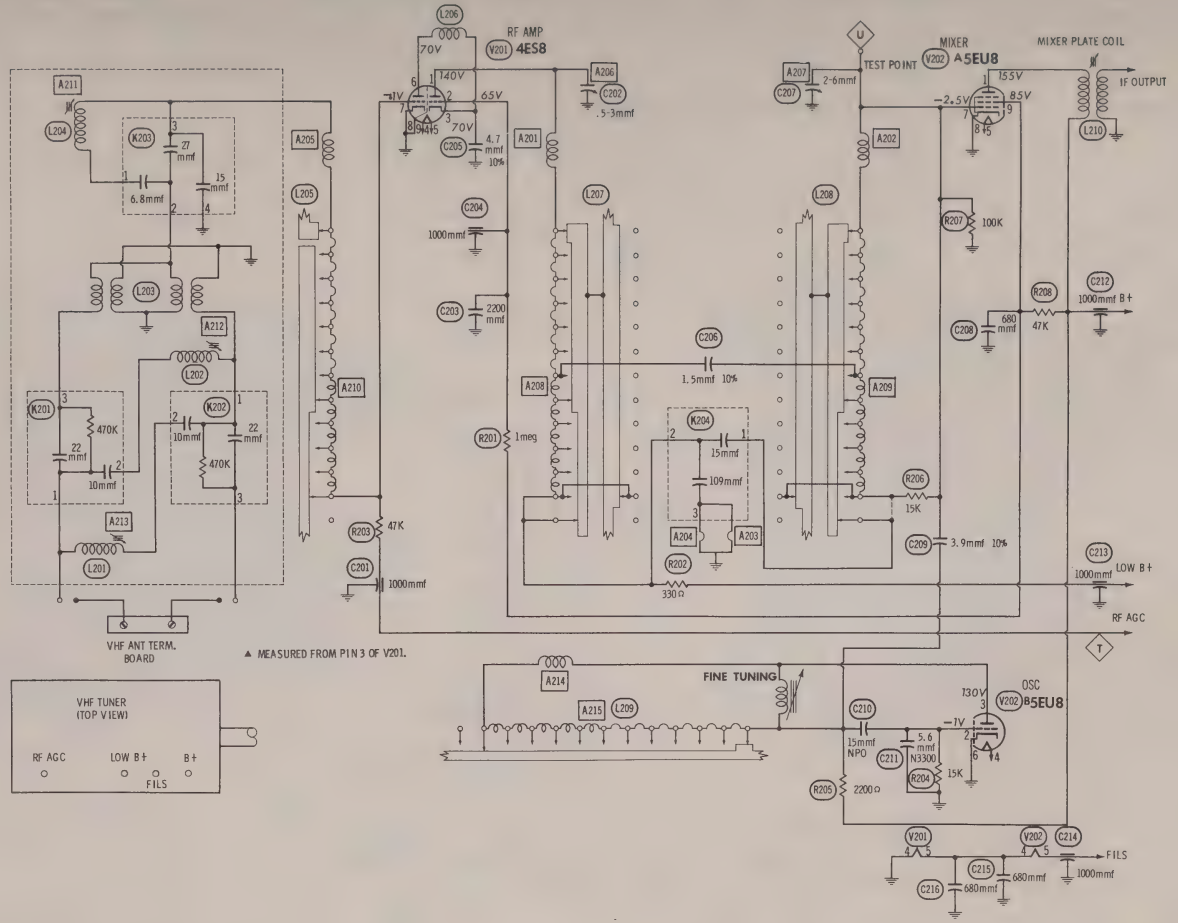


FIG.3

TUNER ALIGNMENT INSTRUCTIONS PAGES 18 & 19



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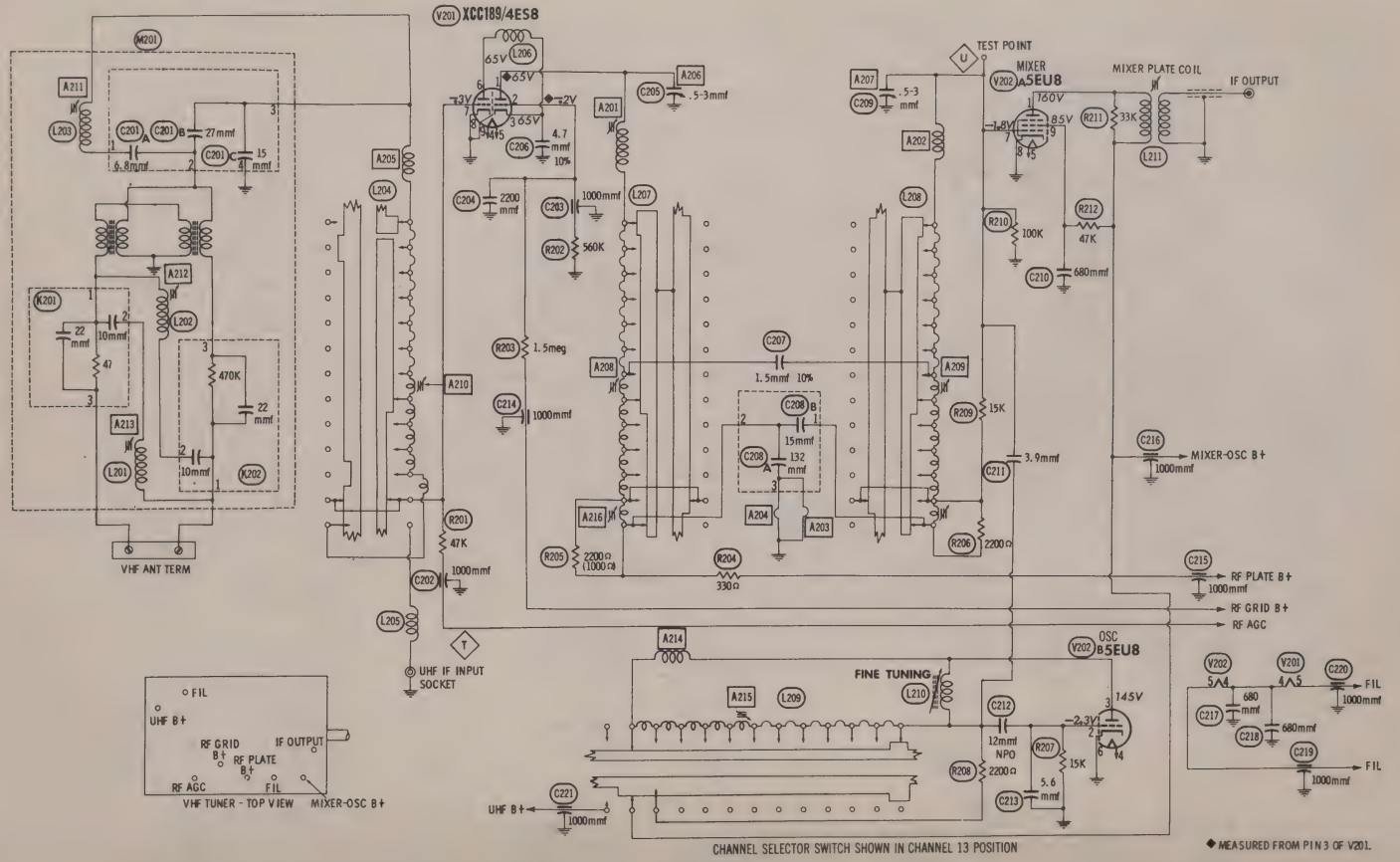
VHF TUNER CMTT-122D

MOTOROLA CHASSIS RTS-433Y, RTS-433



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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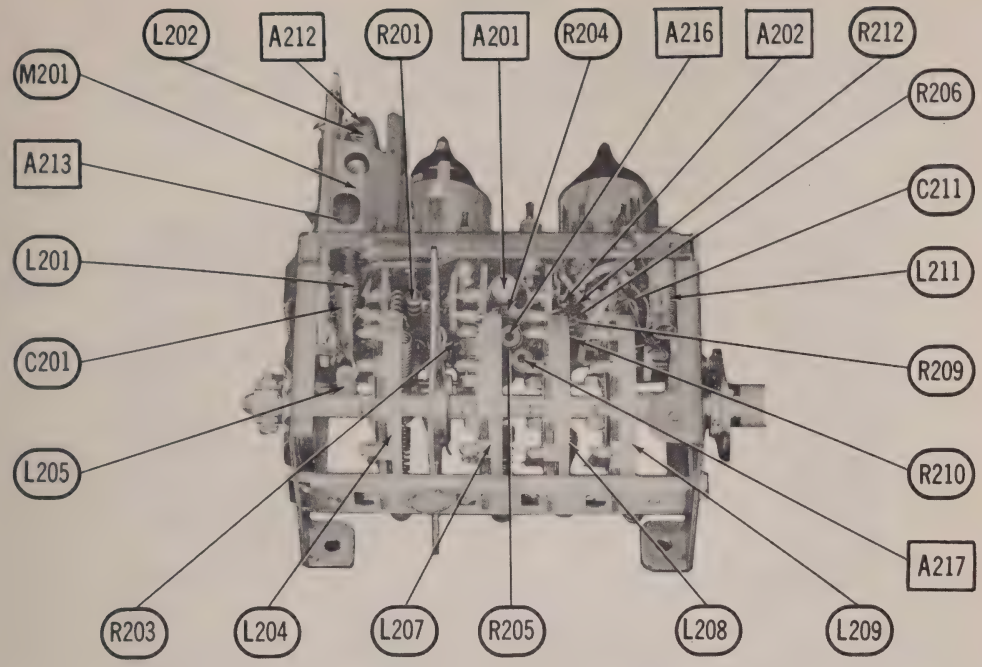
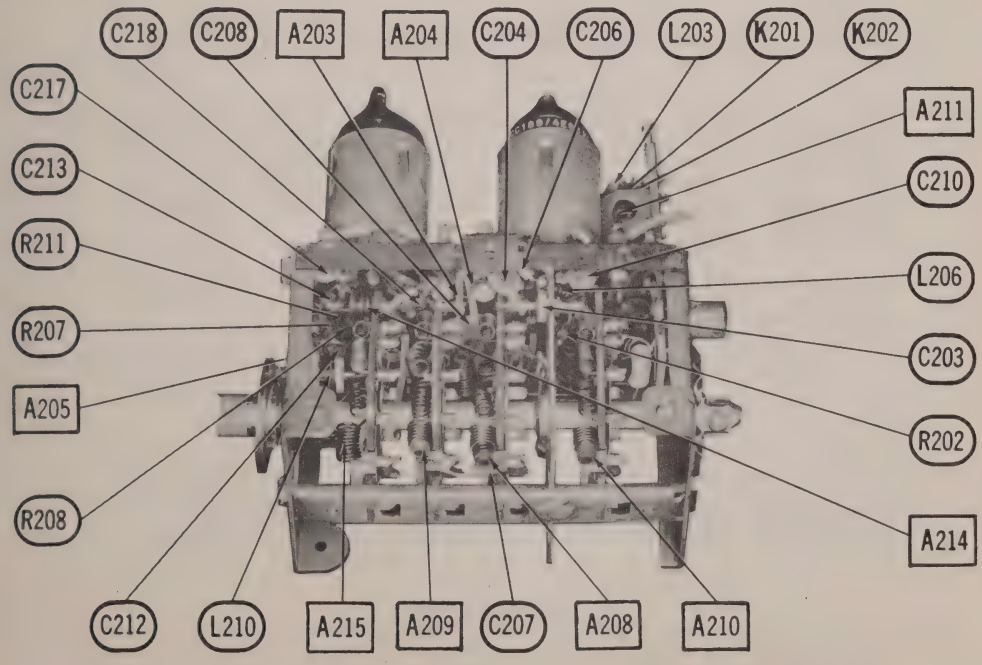
VHF TUNER with UHF Provisions - CMTT-120YB



VHF TUNER CMTT-120YB - LEFT SIDE



VHF TUNER CMTT-120YB - RIGHT SIDE

VHF TUNER PARTS LIST AND DESCRIPTIONS

CMTT-120YB

TUBES

• GENERAL ELECTRIC •			RAYTHEON •		SYLVANIA •	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	XCC189/4ES8	V202	Mixer - Osc.	5EU8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201A	6.8	†	NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
B	27		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C	15		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C202	1000		EF-001	MFT-1000		CCF-102	CT280A	
C203	1000		EF-001	MFT-1000		CCF-102	CT280A	
C204	2200		BPD-0022	DD-222	BYA10D22	CCD-222	GP222	5HK-D22
C205	.5-3			829-3		CV-1	CT565	
C206	4.7 10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C207	1.5 10%		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V15
C208A	132	#51K752032						
B	15							
C209	.5-3			829-3		CV-1	CT565	
C210	680		DI-680	DD-681	BYA10T68	CCD-681	GP368	10TS-T68
C211	3.9				C10V4C			10TCC-V39
C212	12 NPO			TCZ-12	C10Q12C	CCTO-120	CNO-412	10TCC-Q12
C213	5.6							10TCC-V56
C214	1000		EF-001	MFT-1000		CCF-102	CT280A	
C215	1000		EF-001	MFT-1000		CCF-102	CT280A	
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	680		DI-680	DD-681	BYA10T68	CCD-681	GP368	10TS-T68
C218	680		DI-680	DD-681	BYA10T68	CCD-681	GP368	10TS-T68
C219	1000		EF-001	MFT-1000		CCF-102	CT280A	
C220	1000		EF-001	MFT-1000		CCF-102	CT280A	
C221	1000		EF-001	MFT-1000		CCF-102	CT280A	

Motorola Part No. † Part of M201.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	47K	
R202	560K	
R203	1.5 meg	
R204	330Ω	

ITEM No.	RATING	REMARKS
R205	2200Ω	(1000Ω)*
R206	2200Ω	
R207	15K	
R208	2200Ω	

ITEM No.	RATING	REMARKS
R209	15K	
R210	100K	
R211	33K	
R212	47K	

Note 1. Some versions may use 1000Ω in this application. *Alternate

COILS (RF-IF)

ITEM No.	USE	MOTOROLA PART No.	NOTES
L201	40MC Trap	24K751655 †	
L202	40MC Trap	24K751655 †	
L203	FM Filter	24K752270 †	
L204	Ant. Coils	1V751568	Channel 2-13, includes Wafer Assy.
L205	UHF Input Coil	24K753691	
L206	RF Choke	24K752262	
L207	RF Coils	1V753361	Channel 2-13, Includes Wafer Assy.

ITEM No.	USE	MOTOROLA PART No.	NOTES
L208	Mixer Grid Coils	1V753362	Channel 2-13, Includes Wafer Assy.
L209	Osc. Coils	1V753555	Channel 2-13, Includes Wafer Assy.
L210	Fine Tuning	1V749008	Includes Front Plate Assy.
L211	Mixer Plate Coil	24B747838	

† Part of M201.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K201	Antenna Filter (40MC)	10mmf, 22mmf, 470K	51C747535 †	Centralab PC-360
K202	Antenna Filter (40MC)	10mmf, 22mmf, 470K	51C747535 †	Centralab PC-360

† Part of M201

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M201	Hi Pass Filter	1V751664	Complete Assembly

VHF TUNER PARTS LIST AND DESCRIPTIONS

CMTT–122D

TUBES

ITEM No.	USE	GENERAL ELECTRIC • RAYTHEON • SYLVANIA • TYPE
V201	RF Amp.	4ES8
V202	Mixer-Osc.	5EU8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	1000			EF-001	MFT-1000		CCF-102	CT280A	
C202	.5-3				829-3		CV-1	CT565	
C203	2200			BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C204	1000			EF-001	MFT-1000		CCF-102	CT280A	
C205	4.7	10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C206	1.5	10%		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V15
C207	2-6				829-6		CV-3	CT552	
C208	680			BPD-00068	DD-680	BYA10T68	CCD-681	B-368	10TS-T68
C209	3.9	10%				C10V4C			10TCC-V39
C210	15	NPO		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C211	5.6	N3300	Pt. #21K749378				"		
C212	1000			EF-001	MFT-1000		CCF-102	CT280A	
C213	1000			EF-001	MFT-1000		CCF-102	CT280A	
C214	1000			EF-001	MFT-1000		CCF-102	CT280A	
C215	680	10%		DI-680	DD-681		CCD-681	GP368	10TS-T68
C216	680	10%		DI-680	DD-681		CCD-681	GP368	10TS-T68

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	1meg	
R202	330Ω	
R203	47K	

ITEM No.	RATING	REMARKS
R204	15K	
R205	2200Ω	
R206	15K	

ITEM No.	RATING	REMARKS
R207	100K	
R208	47K	

COILS (RF-IF)

ITEM No.	USE	MOTOROLA PART No.	NOTES
L201	40MC Trap Coil	24K751655	
L202	40MC Trap Coil	24K751655	
L203	Ant. Trans.	24B749398	
L204	Trap Coil	24K752270	
L205	Ant. Coils	1V752397	Channels 2-13, Includes Wafer Assembly

ITEM No.	USE	MOTOROLA PART No.	NOTES
L206	RF Choke	24K752261	
L207	RF Coils	1V751663	Channels 2-13, Includes Wafer Assembly
L208	Mixer Grid Coils	1V751662	"
L209	Osc. Coils	1V748991	"
L210	Mixer Plate Coil	24B747838	"

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K201	40MC Filter	10mmf, 22mmf, 470K	51C747535	Centralab PC-360
K202	40MC Filter	10mmf, 22mmf, 470K	51C747535	Centralab PC-360
K203	Antenna Coupling	6.8mmf, 15mmf, 27mmf	51K751641	Centralab PC-365
K204	RF Coupling	15mmf, 109mmf	51K753482	

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
	Shaft	1V751525	Fine Tuning, Includes Cam
	Shaft	47D751523	VHF Channel Selector

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC	RAYTHEON	SYLVANIA
	USE	TYPE	USE	TYPE
V1	1st Video IF Amp	3BZ6	V6 Audio Det	3DT6
V2	2nd Video IF Amp	3BZ6	V7 Audio Output	XL84, 8BQ5 (6BQ5) *
V3	3rd Video IF Amp -		V8 Vert. Mult. - Vert. Output	12EV8
	Sound IF Amp	6AU8	V9 Horiz. AFC - Horiz. Osc.	5GB8/5EA8 (5EA8/6BU8)
V4	Video Output - Vert. Mult.	6CN8 (6EB8, 6GN8) *	V10 Horiz. Output	12GC8
V5	AGC, Keying - Sync Sep. -		V11 Damper	12AZ3
	Noise Limiter	3BU8	V12 HV Rectifier	8020

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	MOTOROLA PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V13	17DTP4		17DTP4 ①		17DTP4 ②	① Aluminized ② Silver Screen 85%

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C3	140	150	23X75101	AT HR-12-05	XA0855	FP1T 5	TMS-1480	TVL-1420	
C3A	●150	300	23X75006	AT 64-84-94 ▲20020		FP41T 55		TVL2-6577 ▲	
B	●150	300			HR30335	TC63			
C	● 20	300							
D	● 50	300							
C7	20	300	23X75719	PR30420	BR1045	TC62	TD-10-450	TVA-1804	
C8	2	10	23X74942	PR30300	BBR2-50	TC302	TD-2-25	TVA-1201	
C9	20	50	23X75019	BC30520	BBR30-25	TC26	TD-20-50	TVA-1705	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	1500	3000V		HVD-30-1530	DD30-152	HVB3GD5		30F-185	30GA-185
C7	.25	600V		P288H-25		CUB2P25	1DP-S-354	6FM-3025	2TM-P25
C8	470			DD-471	DD-471	DD-471	*471	S-347	10TS-T47
C9	18	±5% 12%	‡‡ #2E1J2057S						10TCF-Q18
C10	5.6	±5% ± .5mmf	‡‡ #2E1J2019S4						
C11	680			BPD-00686	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C12	47	±5% 2%	‡‡ #2E1J3022S				*		10TCF-Q47
C13	1000			BPD-001	DD-102	BYA10X	CCD-102	B-1G	5HK-D0
C14	470			BPD-0047	DD-471	BYA10T	CCD-471	B-147	5HK-D47
C15	1000			BPD-001	DD-102	BYA10X	CCD-102	B-1G	5HK-D0
C16	1000			BPD-001	DD-102	BYA10X	CCD-102	B-1G	5HK-D0
C17	330	±3300 10%	‡‡ #2E1J3123				*		
C18	1000			BPD-001	DD-102	BYA10X	CCD-102	B-1G	5HK-D0
C19	5.6	±5% ± .5mmf	‡‡ #2E1J3019S4				*		
C20	5.6	±5% ± .5mmf	‡‡ #2E1J3019S				*		10TCP-V47
C21	5.6	±5% ± .5mmf	‡‡ #2E1J2473S4				*		
C22	3.9	±5% ± .25mmf	‡‡ #1E1J3973S				*		
C23	1000			BPD-01	DD-103	BYA10X	CCD-103	B-1G	5HK-E0
C24	2.7	±5% 12%				C10V2C	*		10TCC-V39
C25	2.7	±5% 12%	‡‡ #2E1J2973J				*		10TCF-Q27
C26	10	±5% 10%	‡‡ #2E1J3108S				*		10TCP-Q10
C27	47	±5% 10%	‡‡ #2E1J3447S				*		10TCP-Q47
C28	1	600V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C29	3000	1400V		DAC-31	DD88-103	HVB1GD5	1HDP-3-103	UAC-110	BL-B30
C30	10000	1400V		DAC-27	DD88-103	HVB1GE	1HDP-3-103	UAC-110	BL-B0
C31	.05	600V		P488H-05	DD-503	CUB4D5	4DP-3-503	GEM-405	4TM-H50
C32	3000	1400V		DAC-27	DD88-103	HVB1GE	1HDP-3-103	UAC-110	BL-B0
C33	3000			BPD-03	DD-303	BYA5GE	CCD-303	B-130	5HK-E30
C34	10000			BPD-01	DD-103	BYA10GE	CCD-103	B-1G	5HK-E30
C35	10000			BPD-01	DD-103	BYA10GE	CCD-103	B-1G	5HK-E30
C36	470	3000V		HVD-30-470	DD30-471	HVB3DT47	3CCD-471	3EY-347	3DGA-T47
C37	2.7	±5% ± .25mmf	‡‡ #2E1J2973T			C10V2C			10TCC-V27
C38	47	±5% 10%		DTH-47	DTH-47	C10Q4TU	CCTH-470	CNT-447	10TCU-Q47
C39	2.4	±5%		P288N-24	DTT-2R4	C10Y2RC	CCTD-2R4	CMD-S24	10TCU-V2T
C40	10000			BPD-01	DD-103	BYA10E	CCD-103	B-1G	5HK-E0
C41	1000			BPD-001	DD-102	BYA10X	CCD-102	B-1G	5HK-D0
C42	1000			BPD-00051	DD-101	LU71	CCD-101	B-1S	10TS-T15
C43	3000			BPD-005	DD-502	BYA10D5	CCD-502	B-150	5HK-D50
C44	3000			BPD-005	DD-502	BYA10D5	CCD-502	B-150	5HK-D50
C45	18	±5% 10%	‡‡ #2E1J3973J				*		10TCF-Q18
C46	3000	2000V			DD30-502	HVB3DD5	3CCD-502	3EY-347	3HK-D0
C47	10000			BPD-01	DD-103	BYA10E	CCD-103	B-1G	5HK-E0
C48	10000			BPD-00103	DD-103	BYA10D5	CCD-103	B-1G	5HK-D0
C49	.02	600V		P488N-02	DD-203	CUB4G3	6DP-3-203	GEM-G3	6TM-H20
C50	.1	600V	Note 1	P488N-1	DD-104	CUB4G1	6DP-3-104	GEM-G1	6TM-H0
C51	1000		Note 1	BPD-01	DD-103	BYA5DC	CCD-103	B-1G	5HK-E0
C52	1000			BPD-01	DD-103	BYA10E	CCD-103	B-1G	5HK-E0
C53	1000	3000V		HVD-30-1000	DD30-102	HVB3DE	3CCD-203	3HV-210	3DGA-D0
C54	.04	600V	1%	1484-M033		CUB4E4	6DP-3-253Z	GEM-E4	6TM-F40
C55	.1	600V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C56	.1	600V		P488N-1	DF-104	CUB4P1	4DP-4-104	GEM-401	4TM-P1
C57	.1	600V		P488N-1	DF-104	CUB4P1	6DP-4-104	GEM-601	6TM-P1
C58	.04	600V		P488H-04	DD-403	CUB4E4	4DP-3-403	GEM-E4	6TM-S40
C59	180	5000V	10%	‡‡ #2E1J3513					
C60	56	5000V	10%	‡‡ #2E1J3503					
C61	100	3000V	M750 10%	Note 3					
C62	1000		10%		DS-1000	DD-102	SR5E4	CCD-102	GP2G	10TS-D0
C63	1000		10%		DS-1000	DD-102	SR5E4	CCD-102	GP2G	10TS-D0
C64	1000			BPD-001	DD-102	BYA10X	CCD-102	B-1G	5HK-D0
C65	1	600V		P488N-1	DD-104	BYA10T47	CCD-104	B-147	10TS-T47
C66	150			BPD-00015	DD-151	LU71S	CCD-151	B-1S	10TS-T15
C67	.05	600V		P488H-15	DF-504	CUB4P15	4DP-4-154	GEM-4015	6TM-P15
C68	.005	6000V		HVD-30-1500	DD30-152	HVB3DD5		30F-215	30GA-D15

Note 1. Some versions may use single unit (.02mfd) for C50 & C51.
Note 2. Alternate Value Ranged @ 24V (Pt. #2E7J3480).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg		18KT81497					Volume
B	500k Tap							
D	Switch							Power Off-On
R2	20k		18KT83018					Contrast
B	20k Tap							
R3A	100k		18KT81495					Brightness
B	200k							Vert. Hold
R4A	4meg		18KT83886	TT-86	B47-5meg-S	BB-240	PTA56L	Noise Gate (Sync. Sub.)
B	4meg			Not Req.	Not Req.	TM4	Not Req.	
R5A	4meg		18KT81494					Vert. Size (Height)
B	4meg							Vert. Linearity
R6	5000Ω	2½W	17CT81903				PFL5K	Horiz. Size

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R32	100K	
R33	47K	
R34	330K	
R35	470Ω 3W	Pt. #1K752482 (IRC #PW5-470Ω
R36	82K	
R37	560K	
R38	22K 2W	
R39	560Ω	
R40	100Ω	
R41	180Ω 1W	
R43	220Ω	
R44	200Ω	
R44	33K	
R45	1meg	
R46	680K	
R47	18K	
R48	5 deg	
R49	150K	
R50	560K	Note 1
R51	470K	
R52	1meg	
R53	180K	
R54	1meg	
R55	33K	
R56	150Ω 1W	
R57	1meg	

ITEM No.	RATING	REMARKS
R58	330Ω	
R59	330Ω	
R60	2700Ω	
R61	22K	
R62	22K	
R63	820Ω 2W	
R64	1meg	
R65	470Ω	
R66	12K	
R67	22Ω 2W	
R68	100K 1W	
R69	680Ω 1W	
R70	1.5Ω 5W	
R71	560Ω	
R72	820Ω	
R73	2700Ω 3W	Pt. #1K74759 (IRC #PW5-2700Ω
R74	22K 2W	
R75	5Ω 7W	Pt. #1K753207
R76	200Ω (Cold 6Ω (Hot)	Pt. #6K74541J
R77	52Ω 25W	Pt. #1K753306 (IRC #2DA-52Ω
R78	2.5meg	
R79	22K	

Note 1. May not be used in some versions.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	Tone Comp.	3300mmf, 5000mmf, 68K	S1CT53304	
K2	Sync Sep., Grid	220mmf, 5000mmf, 470K, 10meg	S1CT75085	
K3	Vert. Integrator	1000mmf, 2000mmf, 68K, 100K, 100K	S1CT52018	
K4	Vert. Mult.	6000mmf, 10000mmf, 20000mmf, 10000mmf, 15000mmf, 10000mmf, 15K, 18K, 18K2 22K, 3.5meg *	S1KT61863 ①	
K5	AFC Network	100mmf, 100mmf, 2200mmf, 390K, 390K	S1KT53307	
K6	AFC Filter	450mmf, 130K, 1meg	S1KT53308	
K7	Horiz. Osc.	330mmf, 5600mmf, 2000mmf, 5000mmf, 50000mmf, 10000mmf, 620Ω, 18K, 47K, 2.7meg	S1KT53305	

* Not used. ① Alternate Pt. #S1KT53530.

COILS (RF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	Meissner PART No.	Mallory PART No.	Stancor PART No.	
L2	47.25MC Trap	24KT54007	TV-153 ▲	6325 ▲	RTC-8526 ▲	
L2A	41.25MC Trap	24KT54006				
B	1st Video IF	24KT54008				
L2A	2nd Video IF	24KT54008				
L3	47.25MC Trap					
L4	3rd Video IF	24KT53953	TV-130 ▲	6219 ▲	VF-4 ▲	RTC-8531 ▲
L5	4th Video IF	24KT53954				
L6	RF Choke	24KT53543	BC-566	6612		RTC-8522
L7	RF Choke	24KT53544	BC-565	6611-18		RTC-8521
L8	Shunt Peaking Coil	24KT54487	TV-188	6174	VP-8	RTC-8592
L9	Peaking Choke	24KT54488				
L10	Series Peaking Coil	24KT54704 ▲	TV-194	6112	VP-3	RTC-8574
L11A	L-SMC Trap	24KT59319 ③				
B	1st Sound IF					
L12	Series Peaking Coil	24KT53479 ③	TV-185 *	6181 *	VP-5 *	RTC-8598 *
L13	Series Peaking Coil	24KT53487	TV-188	6174	VP-8	RTC-8592
L14	Shunt Peaking Coil	24KT54003 ③	TV-207 ▲	6184 ▲		RTC-8588 ▲
L15	Series Peaking Coil	24KT53535	TV-194	6112	VP-3	RTC-8574
L16	2nd Sound IF Trans	24DT53240				
L17	Quadrature Coil	24DT52238 ②				
L18	RF Choke	24KT53709	BC-566	6611		RTC-8521
L19	RF Choke	24KT53576	BC-566	6611		RTC-8521
L20	PC Choke	24KT43387	BC-562	6604	VP-2	RTC-8518

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	Meissner PART No.	Mallory PART No.	Stancor PART No.	
L21	4.5MC Trap	24KT54007	TV-153 ▲	6325 ▲	RTC-8526 ▲	
L22A	41.25MC Trap	24KT54006				
B	1st Video IF	24KT54008				
L22A	2nd Video IF	24KT54008				
L23	47.25MC Trap					
L24	3rd Video IF	24KT53953	TV-130 ▲	6219 ▲	VF-4 ▲	RTC-8531 ▲
L25	4th Video IF	24KT53954				
L26	RF Choke	24KT53543	BC-566	6612		RTC-8522
L27	RF Choke	24KT53544	BC-565	6611-18		RTC-8521
L28	Shunt Peaking Coil	24KT53487	TV-188	6174	VP-8	RTC-8592
L29	Peaking Choke	24KT53488				
L30	Series Peaking Coil	24KT54704 ▲	TV-194	6112	VP-3	RTC-8574
L31A	L-SMC Trap	24KT59319 ③				
B	1st Sound IF					
L32	Series Peaking Coil	24KT53479 ③	TV-185 *	6181 *	VP-5 *	RTC-8598 *
L33	Series Peaking Coil	24KT53487	TV-188	6174	VP-8	RTC-8592
L34	Shunt Peaking Coil	24KT54003 ③	TV-207 ▲	6184 ▲		RTC-8588 ▲
L35	Series Peaking Coil	24KT53535	TV-194	6112	VP-3	RTC-8574
L36	2nd Sound IF Trans	24DT53240				
L37	Quadrature Coil	24DT52238 ②				
L38	RF Choke	24KT53709	BC-566	6611		RTC-8521
L39	RF Choke	24KT53576	BC-566	6611		RTC-8521
L40	PC Choke	24KT43387	BC-562	6604	VP-2	RTC-8518

① Includes #2000 Res. ② Includes 5800Ω Res. ③ Includes .5mfd Cap. * Parallel with 5800Ω Res.
② Includes C35. ③ Includes 6800Ω Res. * ▲ Fairrcafe mounting. ▲ Parallel with 6800Ω Res.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						NOTES
	CURRENT (Measured)	DC RES	INDUCTANCE @ CURRENT 1000 ⁰⁄₀₀	MOTOROLA PART No.	Meiss PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	
L33	300A	35Ω	65 Hy	25KT51797AZ ①				C-2343	C-28X	

① Alternate Pt. #25KT51797.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA						
		MOTOROLA PART No.	Mant PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	Vert. Output	25KT54067-AQ	A-3854	V-316 ①			26073	A-133X ①
T2	Vert. Output	25KT54067						
	Yoke Horiz. (19MR)	24KT92132-W				PCM1854		Y-53 ②③
	(19P) Vert. (32MR)							Y-62-1 ③
	Alt. Yoke	24KT92132						
	Yoke Clamp	42A77289						
	Rear Cover and Centering Device	50CT51843-0					C-2343	C-28X
T3	Horiz. Output	24KT52328-L ④						
	Alt. Horiz. Output	24KT52328 ⑤						
	Primary and Secondary Coils	24KT51812						

① Drill new mounting hole(s). ② Cut and tape green lead.
③ Connect yoke #2 to plug #4; yokes #1 & #3 to plug #5; yoke #7 to plug #6; yoke #8 to plug #2; yoke #4 to plugs #1 & #8.
④ Use original rear cover and centering device, and damping network if necessary.
⑤ Complete transformer assembly.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T4	4900Ω	6-8Ω	25KT51989-AR ①	A-3903 ②	AU-608 ②	A-3650 ②	24905 ②	S-83X ②

① Alternate Pt. #25KT51989
② Drill new mounting hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	3" x 5"	PM	6-8Ω	50CT52927	35A0528	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	MOTOROLA PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.300A	48KT46631	RE504	1N1764	Y-6	SR500	Silicon Type
M2	.300A	48KT46631	RE504	1N1764	Y-6	SR500	Silicon Type
M3		48CT51856	K-1615				Dual Selenium Diode

CRYSTAL DIODES

ITEM No.	CRYSTAL TYPE	REPLACEMENT DATA			NOTES
		MOTOROLA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M4	Clevite	48KT47549	1N295	1N295	Video Detector (Clip-In)

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M5	Tuner	1U753075	CMTT-12ED, VHF, Models 17P6-1A, -2A, -3A, 17T3TBR-A, STANDARD COIL REPLACEMENT Part #GGB-422A
	Tuner	1U751571	CMTT-12DVB, VHF with UHF Provisions, Models 17T3TB-1A, -2A, -3A, 17T3TBR-A
	Tuner	1U751572	WTT-1U, UHF, Models 17T3TB-1A, -2A, -3A, 17T3TBR-A
M6	Antenna	1A742796	JFD TYPE #TA-364, Models 17P6-1A, 17P6-2A
	Antenna	1K753879	JFD TYPE #TA-375, Models 17P6-2A, 17P6-2A, -3A
M7	Circuit Breaker	80KT53396	(Circuit Guard)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO	DESCRIPTION
Safety Glass	61KT53559	Plastic, Tinted, Models 17P6-1A, 17P6-1A
Safety Glass	61KT53501	Plastic, Tinted, Models 17P6-2A, 17P6-2A, 17P6-3A, 17P6-3A
Safety Glass	61KT53997	Plastic, Tinted, Models 17T3TBR-A, 17T3TBR-A

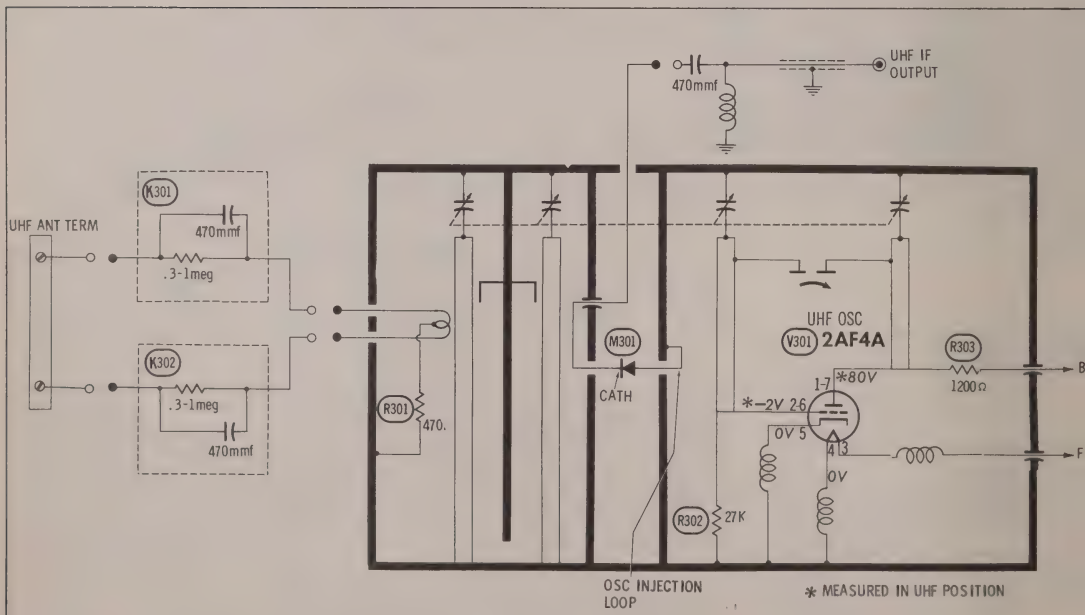
PARTS LIST AND DESCRIPTIONS (Continued)

CABINETS & CABINET PARTS (cont)

NAME	PART NO.	DESCRIPTION
Knob	36K753121	Channel Selector, VHF, Models 17P6-3A, Y17P6-3A, 17T37BR-A, Y17T37BR-A
Knob	36K753117	Channel Selector, VHF, Models 17P6-2A, Y17P6-2A
Knob	36D752438	Channel Selector, VHF, Models 17P6-1A, Y17P6-1A
Knob	34K753110	Channel Indicator, UHF, Model Y17P6-1A
Knob	34K753111	Channel Indicator, UHF, Model Y17P6-2A
Knob	34K753112	Channel Indicator, UHF, Models Y17P6-3A, Y17T37BR-A
Knob	36C752435	Fine Tuning, Models 17P6-1A, 17P6-2A, 17P6-3A, 17T37BR-A
Knob	36K751574	Fine Tuning, Models Y17P6-1A, Y17P6-2A, Y17P6-3A, Y17T37BR-A
Knob	36K753115	Volume, Models 17P6-3A, Y17P6-3A, 17T37BR-A, Y17T37BR-A
Knob	36K753113	Volume, Models 17P6-2A, Y17P6-2A
Knob	36B752436	Volume, Models 17P6-1A, Y17P6-1A
Knob	36K753279	Brightness, Models 17P6-3A, Y17P6-3A, 17T37BR-A, Y17T37BR-A
Knob	36K753277	Brightness, Models 17P6-2A, Y17P6-2A
Knob	36K752432	Brightness, Models 17P6-1A, Y17P6-1A
Knob	36K753116	Contrast, Models 17P6-3A, Y17P6-3A, 17T37BR-A, Y17T37BR-A
Knob	36K753114	Contrast, Models 17P6-2A, Y17P6-2A
Knob	36K752437	Contrast, Models 17P6-1A, Y17P6-1A
Knob	36K753280	Vertical Hold, Models 17P6-3A, Y17P6-3A, 17T37BR-A, Y17T37BR-A
Knob	36K753278	Vertical Hold, Models 17P6-2A, Y17P6-2A
Knob	36K752592	Vertical Hold, Models 17P6-1A, Y17P6-1A
Knob	36K753533	Horizontal Hold, Models 17P6-3A, Y17P6-3A
Knob	36K753532	Horizontal Hold, Models 17P6-2A, Y17P6-2A
Knob	36K753531	Horizontal Hold, Models 17P6-1A, Y17P6-1A
Handle	55C752849	Cabinet, Black, Models 17P6-1A, Y17P6-1A
Handle	55K752850	Cabinet, Tan, Models 17P6-2A, Y17P6-2A
Handle	55K752851	Cabinet, Brown, Models 17P6-3A, Y17P6-3A

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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UHF TUNER WTT-111

UHF TUNER PARTS LIST AND DESCRIPTIONS

WTT-111

TUBES

◆ GENERAL ELECTRIC ◆			RAYTHEON ◆		SYLVANIA ◆	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	
V301	UHF Osc.	2AF4A				

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R301	470K	

ITEM No.	RATING	REMARKS
R302	27K	

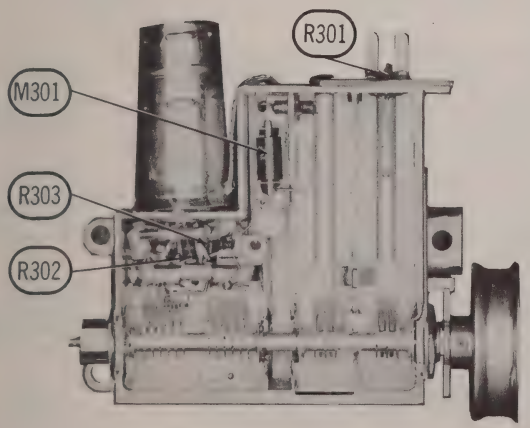
ITEM No.	RATING	REMARKS
R303	1200Ω	

COMPONENT COMBINATIONS

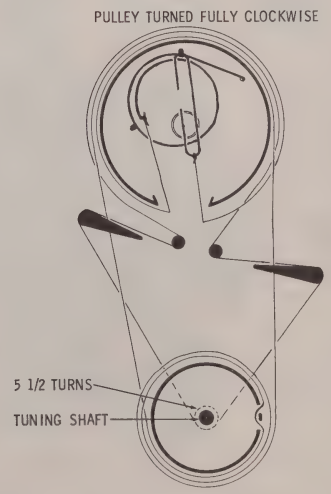
ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA	
K301	UHF Antenna Filter	470mmf, .3-1meg		Centralab	RC-471
				Sprague	AC1-1
K302	UHF Antenna Filter	470mmf, .3-1meg		Centralab	RC-471
				Sprague	AC1-1

CRYSTAL DIODES

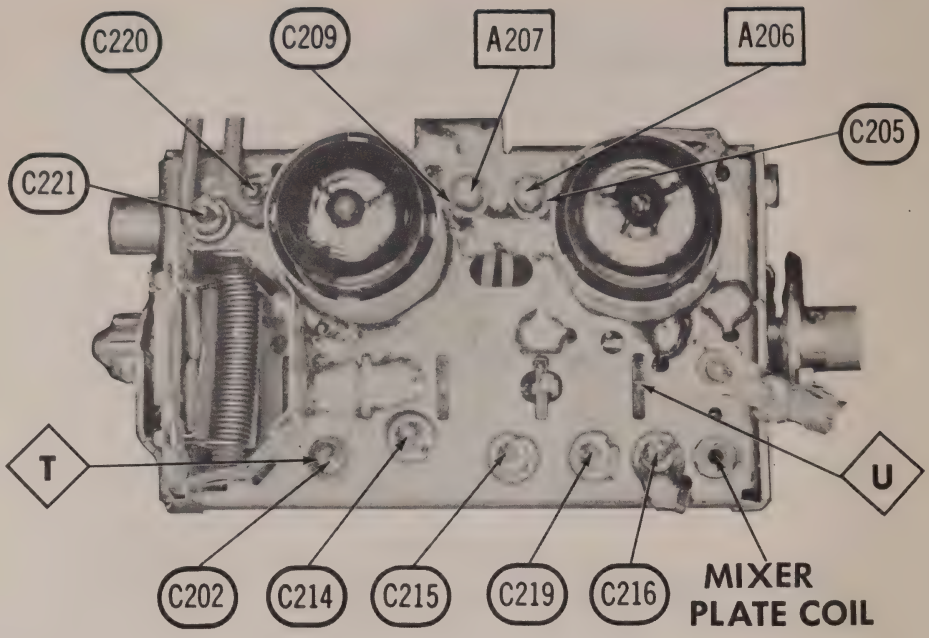
ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M301		742970	1N82A		1N82A	



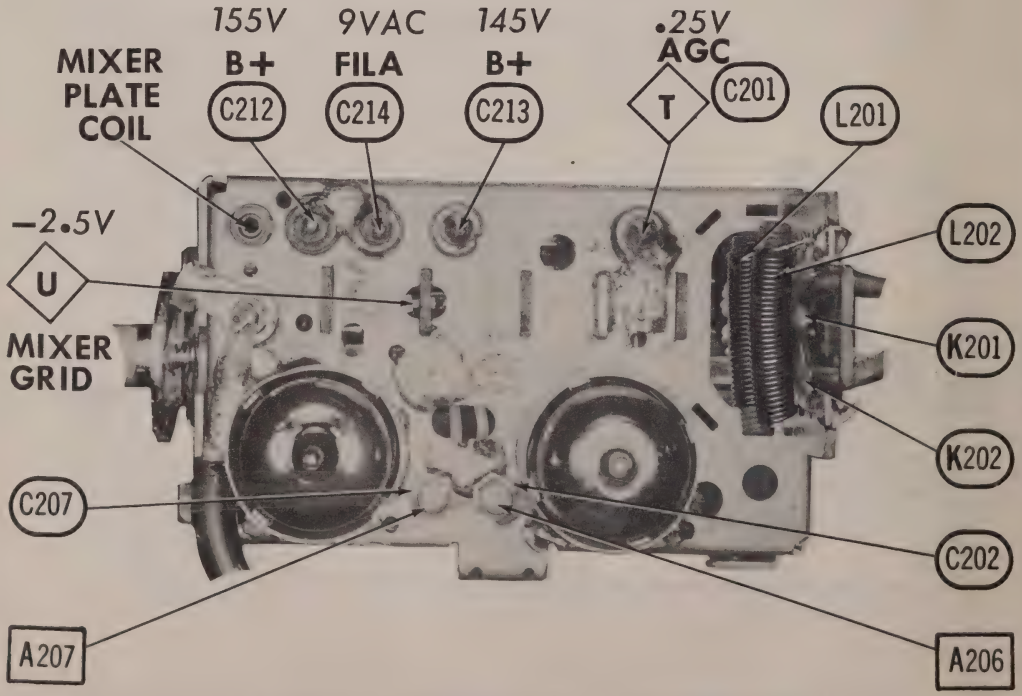
UHF TUNER WTT-111



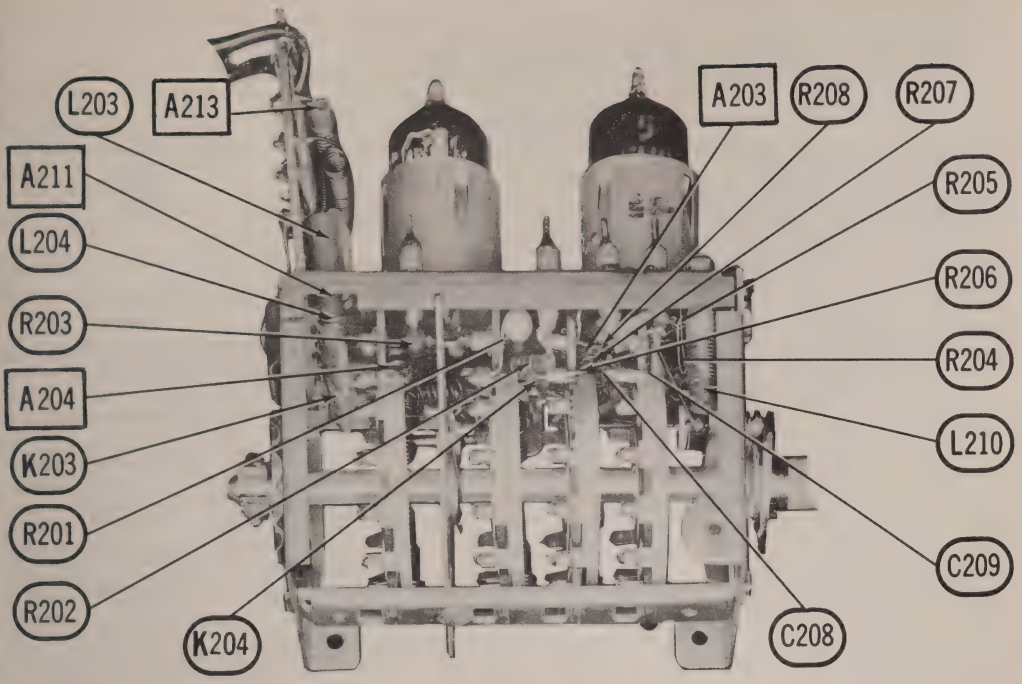
UHF DRIVE CORD STRINGING



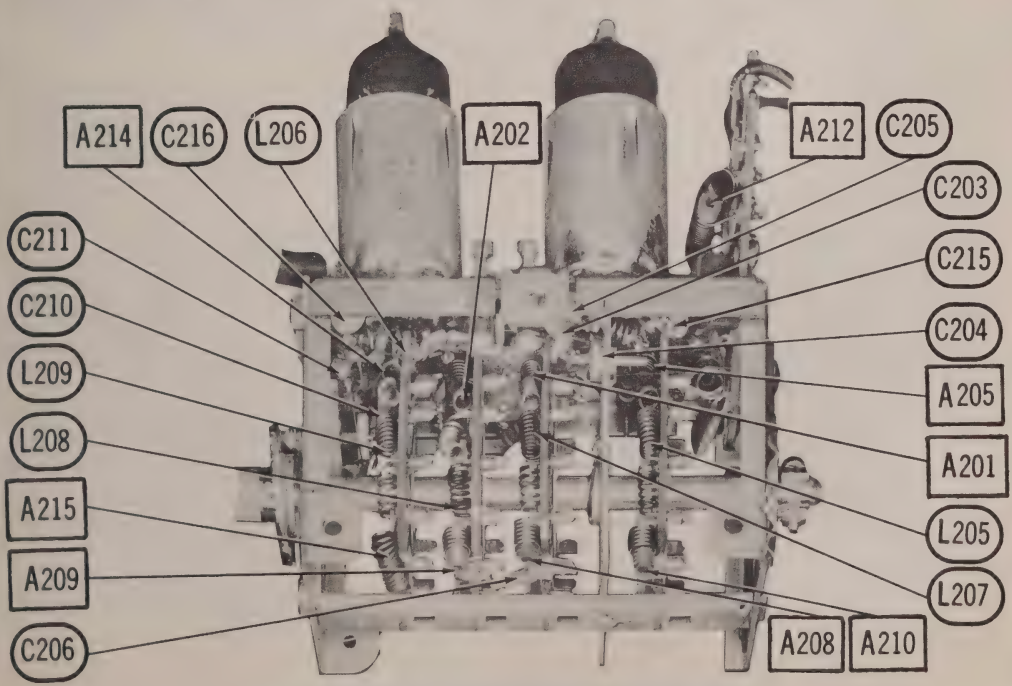
VHF TUNER CMTT-120YB - TOP VIEW



VHF TUNER CMTT-122D - TOP VIEW



VHF TUNER CMTT-122D - LEFT SIDE



VHF TUNER CMTT-122D - RIGHT SIDE

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment. DO NOT remove the tuner cover.
Suggested Alignment Tools: A206, A207 ..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525
A208 thru A213... GENERAL CEMENT #9296, 9297
WALSCO #2546, 2547

VHF RF AND MIXER ALIGNMENT

Connect a clip lead from point Ⓣ to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms
Use only enough sweep generator output to provide a usable pattern on scope.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Preset A206 and A207 so top of screw is .35" above tuner chassis.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point Ⓣ. Low side to chassis.	A201, A202	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown.
2.	"	"	"	"	"	"	A203, A204	Adjust for proper bandwidth as in Fig. 201.
3.	"	"	"	"	"	"	A205	Adjust for maximum amplitude and MINIMUM tilt.
4.	"	"	177MC	175.25MC 179.75MC	7	"	A206, A207	Adjust A206 for proper marker position. Adjust A207 for MINIMUM tilt.
5.	"	"	85MC	83.25MC 87.75MC	6	"	A208, A209, A210	Adjust A208 to place 83.25MC marker on or near peak, A209 to place 87.75MC marker on or near other peak and A210 for maximum gain and MINIMUM tilt.
6.	"	"	"	94MC	"	"	A211	Adjust for MINIMUM response at marker or until it just starts to affect the high frequency side of response curve. NOTE: A211 may be adjusted to trap out interference between 85 and 108MC. However, make certain that no part of a desired channel is trapped out.
7.	"	"	79MC	77.25MC 81.75MC	5	"		Check for response similar to Fig. 201. If necessary make compromise adjustment of A208, A209 and A210 for proper curve on each channel.
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			
8.	"	"	57MC	43.5MC 45.5MC	2	"	A212, A213	Adjust A212 for MINIMUM response at 43.5MC marker and A213 for MINIMUM response at 45.5MC marker. Retouch either or both for flat response consistent with MINIMUM amplitude at trap frequencies.

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	215.75MC	13	Vert. Amp. thru 47K across Video Det. load	A214	Adjust to place marker in trap notch as in Fig. 202.
10.	"	"	207MC	209.75MC	12	"		Marker must fall into trap notch on each channel within plus or minus 750KC of specified marker frequency. If not, make compromise adjustment of A214 for all high band channels.
			201MC	203.75MC	11			
			195MC	197.75MC	10			
			189MC	191.75MC	9			
			183MC	185.75MC	8			
			177MC	179.75MC	7			
11.	"	"	85MC	87.75MC	6	"	A215	Adjust to place marker in trap notch as in Fig. 202.
12.	"	"	79MC	81.75MC	5	"		Marker must fall into trap notch on each channel within plus or minus 750KC of specified marker frequency. If not, make compromise adjustment of A215 for all low band channels.
			69MC	71.75MC	4			
			63MC	65.75MC	3			
			57MC	59.75MC	2			

continued PAGE 19

TUNER ALIGNMENT INSTRUCTIONS (cont)

UHF IF ALIGNMENT

Remove the UHF Tuner from the side of the VHF Tuner so that UHF input receptacle of VHF Tuner is accessible. Coils are accessible thru opening in the side of tuner.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Fig. 203	High side thru matching network to UHF input receptacle. Low side to chassis.	44MC (10MC Swp)	41.25MC 45.75MC	UHF	Vert. Amp. thru 47K to point ⓓ. Low side to chassis.	A216, A217	Adjust for maximum gain and symmetry of response similar to Fig. 204 with markers as shown.

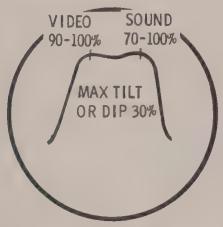


FIG. 201

FIG. 202

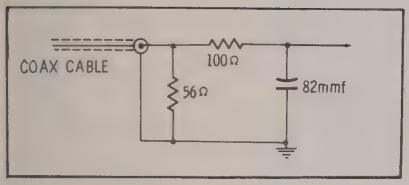


FIG. 203

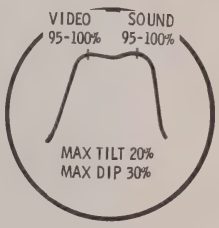
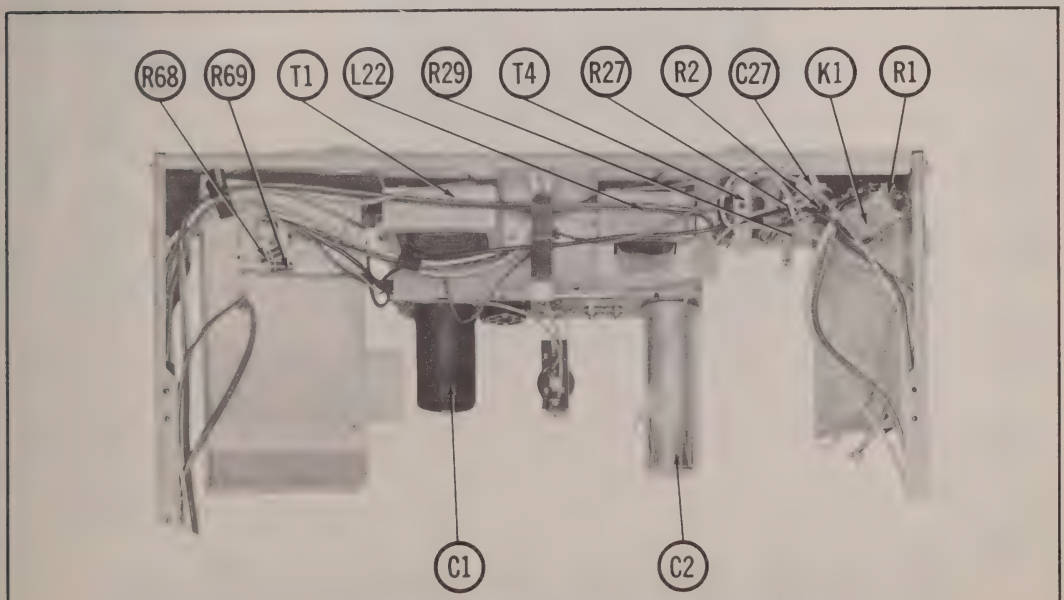
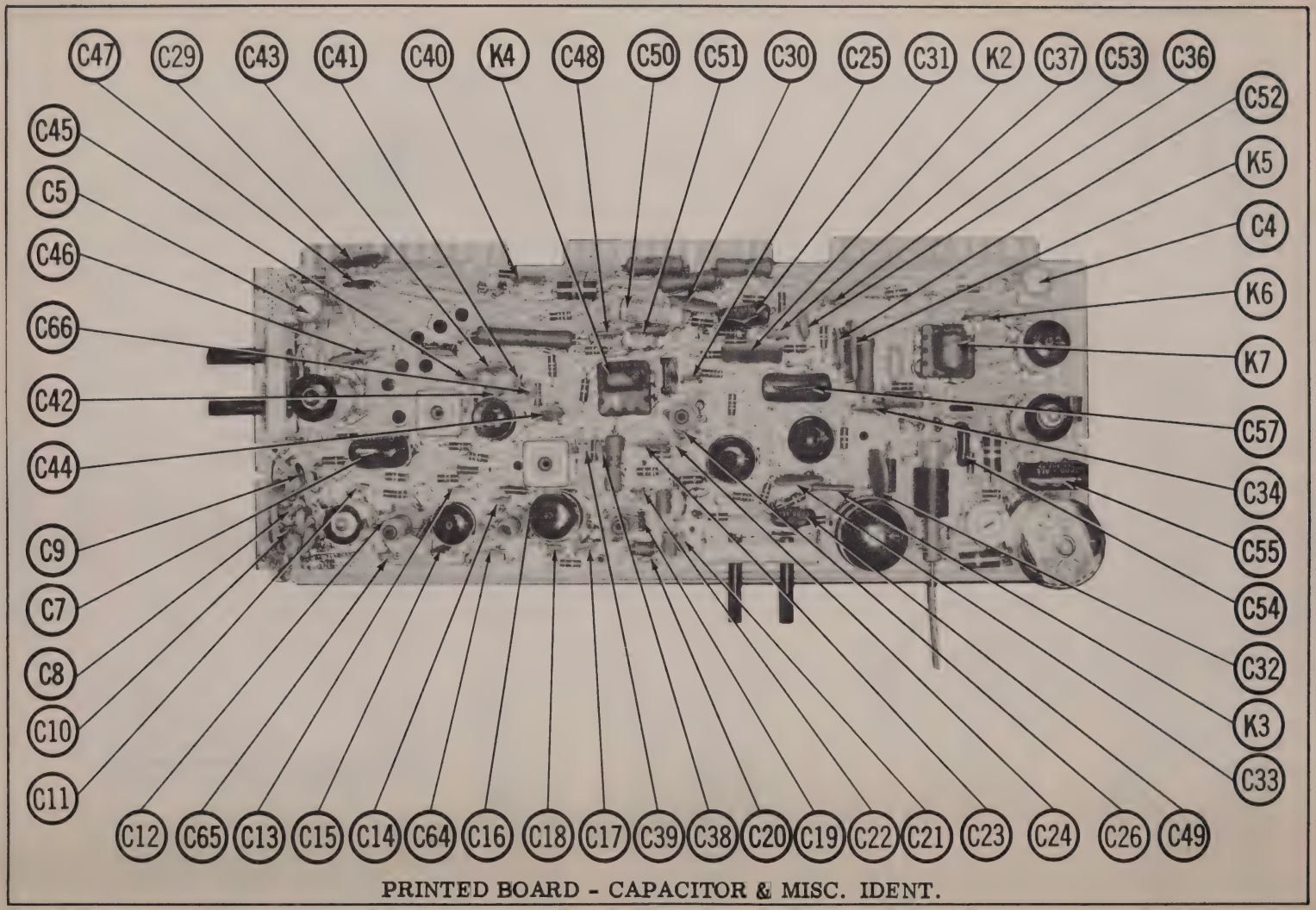


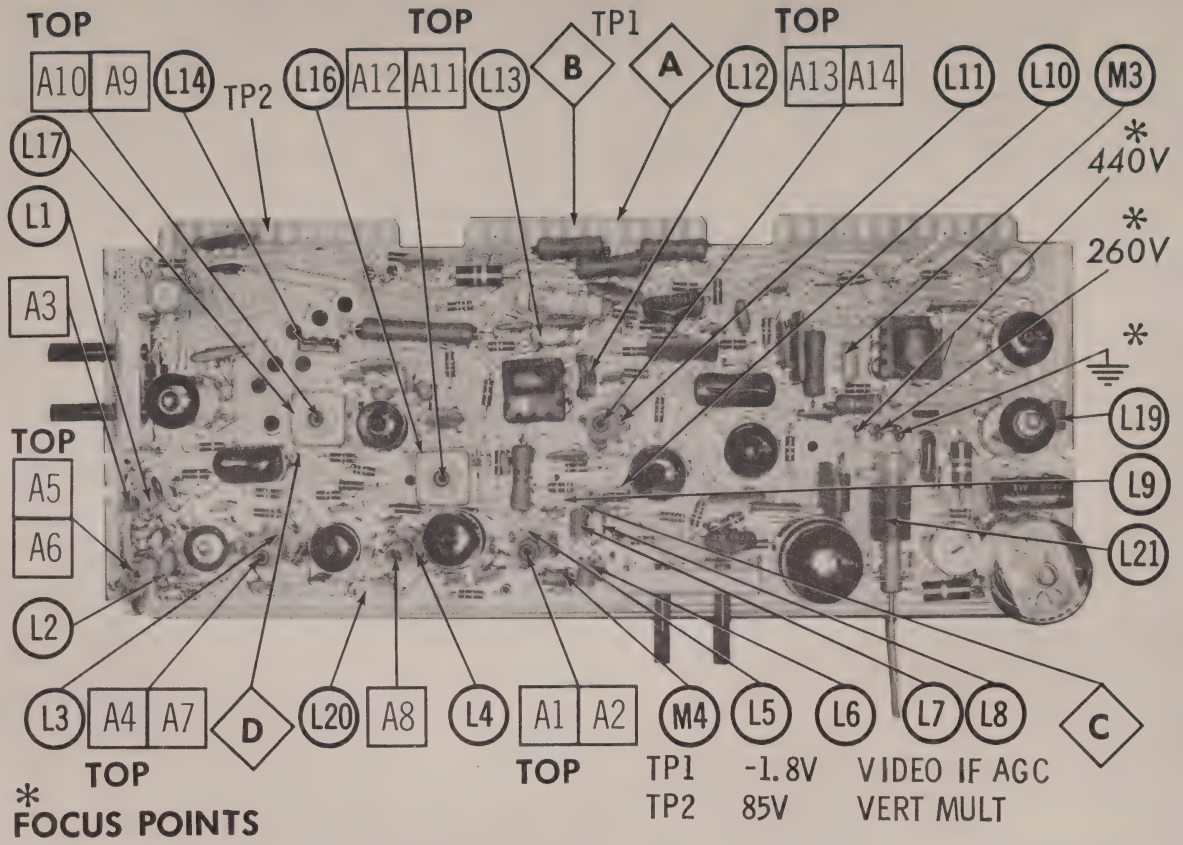
FIG. 204



UPPER CHASSIS - FRONT VIEW



PRINTED BOARD - CAPACITOR & MISC. IDENT.

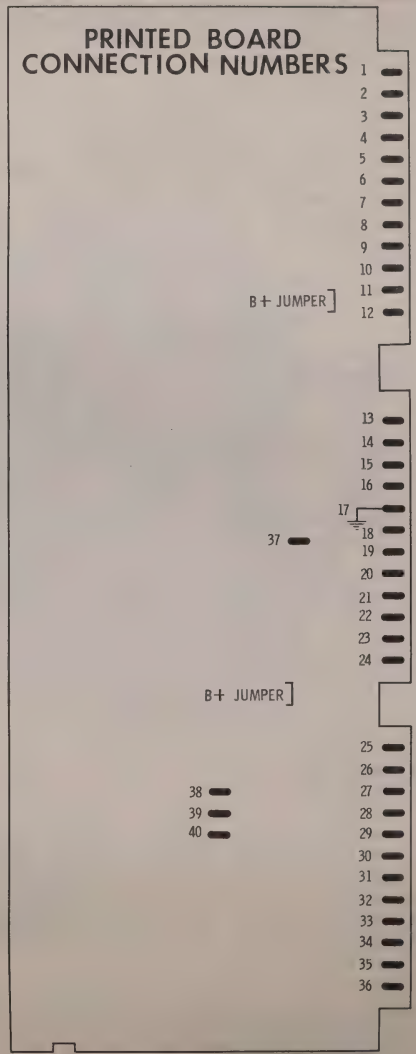


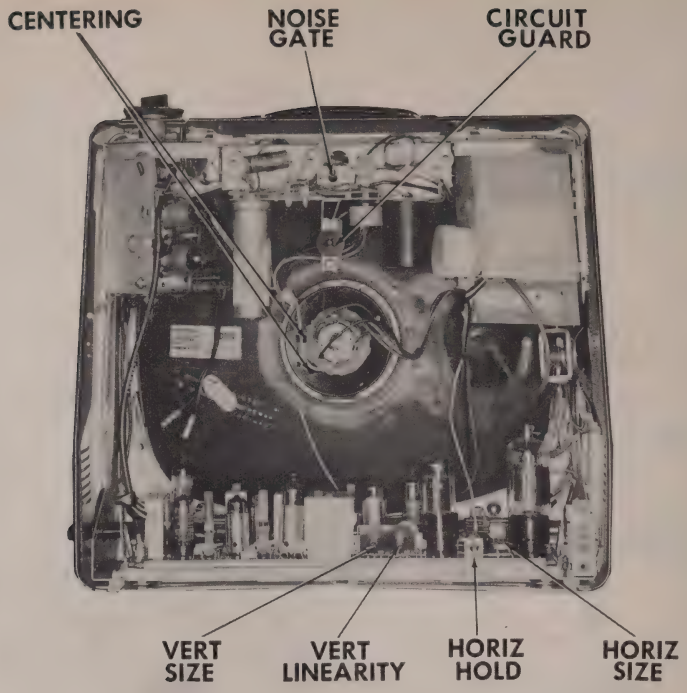
PRINTED BOARD-ALIGN, INDUCTOR, & MISC IDENT.

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9	
V1	3BZ6	680K	47Ω	70Ω	75Ω	■470Ω	■470Ω	0Ω			
V2	3BZ6	60K	INF	75Ω	80Ω	†1000Ω	†1000Ω	†80K			
V3	6AU8	0Ω	100K	†50K	90Ω	80Ω	56Ω	1000Ω	†6000Ω	†6000Ω	
V4	8GN8	0Ω	● 2.2meg	●†5.5meg	40Ω	55Ω	47Ω	3900Ω	†22K	†7000Ω	
V5	3BU8	†2700Ω	†35Ω	2.8meg	35Ω	40Ω	†40K	●†250K	†68K	†10meg	
V6	3DT6	2.5Ω	560Ω	15Ω	10Ω	†390K	†22K	560K			
V7	XL84/ 8BQ5	TP	0Ω	180Ω	70Ω	55Ω	NC	†845Ω	NC	†500Ω	
V8	7EY6	NC	100Ω	†475Ω	†185Ω	● 2.6meg	NC	90Ω	0Ω		
V9	5GH8/ 5EA8	†11K	†2.7meg	†11K	35Ω	25Ω	†47K	0Ω	820Ω	2meg	
V10	12GC6	NC	130Ω	22Ω	NC	1meg	NC	100Ω	●†16K	TOP CAP †17Ω	
V11	12AF3	NC	NC	NC	155Ω	130Ω	NC	NC	NC	†35Ω	TOP CAP ¶
V12	1S2A	PINS 1 THRU 9 HAVE INFINITE RESISTANCE									TOP CAP †565Ω
V13	17DTP4	25Ω	100K	†1meg	0Ω	TP	NC	●280K	15Ω		
V201	4ES8	†6000Ω	†1meg	INF	0Ω	5Ω	▲0Ω	3.5meg	0Ω	0Ω	
V202	5EU8	†8200Ω	15K	†10K	5Ω	10Ω	0Ω	100K	0Ω	†55K	
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1. ■ MEASURED FROM PIN 2 OF V2.
‡ MEASURED FROM CAP OF V11. ▲ MEASURED FROM PIN 3 OF V201.
NC NO CONNECTION TP TIE POINT





CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

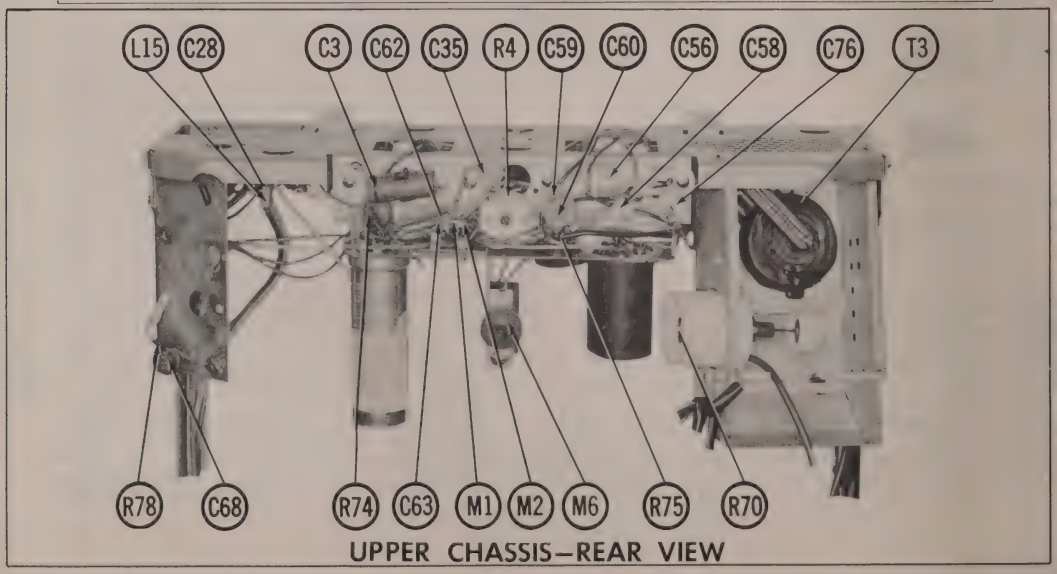
Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast Controls for a normal picture.

Turn the Horizontal Hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

Adjust Horizontal Size Control for a picture SLIGHTLY larger than necessary to fill picture mask horizontally.



UPPER CHASSIS—REAR VIEW

PHOTOFACT® Folder

**PRODUCTION CHANGE
BULLETIN 246**

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 16 IN SET 485

Silvertone Model 222 (Ch. 528.53680) was covered in PHOTOFACT Folder 16 - Set 485.

Model 1220 (Ch. 528.53930) is electrically similar to the model covered except for the following changes and is added with the publication of this bulletin.

* TRANSISTOR CHANGES

X1 (RF Amplifier) is changed to Type T38.

X2 (Mixer) is changed to Type T36.

X3 (Oscillator) is changed to Type T37.

X4 (1st IF Amplifier) is changed to Type T47.

X5 (2nd IF Amplifier) is changed to Type T48.

X6 (Driver) is changed to Type T45.

X7 & X8 (Output) are changed to Type T45.

* Some models using this chassis may use transistors identified only by manufacturer's Type Number. Replacements for these transistors should be ordered by the type number given in the changes of type numbers added above.

COMPONENT CHANGES

R15 is increased from 39K to 82K.

R16 is increased from 390Ω to 560Ω.

R17 is omitted.

C37 is omitted.

SILVERTONE MODEL 1220 (CH. 528.53930)

(CONTINUED ON THE REVERSE SIDE)

PRODUCTION CHANGE
BULLETIN 246

****** CORRECTION NOTICE ******

Philco Models G4240, L, G4656S, G4658S, SL, SW, G4660S, SL, SM, G4662, P, G6628, L, G6632S, SL, SW, UG4240, L, UG4656S, UG4658S, SL, SW, UG4660S, SL, SM, UG4662, P, UG6628, L, UG6632S, SL, SW (Ch. 9L60, U) were covered in PHOTOFACT Folder 1 - Set 429.

The following corrections should be made on the main schematic diagram, Page 19.

COMPONENT CHANGES

C51 (.022) should be C52 (330mmf).

C52 (330mmf) should be C53 (100mmf).

C53 (100mmf) should be C51 (.022).

PHILCO CHASSIS 9L60, U

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Terminal 5 of L14 is connected to ground.

R19 is increased from 22K to 56K.

C3 and C4 are omitted.

R24 is omitted.

C5A and C5B is increased from 50mfd @ 12V to 150mfd @ 15V, Part #18-120-5.

L13 (1st IF Trans.) is changed to Part #10-138-2.

The Printed Board (Complete) is changed to Part #84-11669-0.

The Printed Board (Less All Components) is changed to Part #25-34-1.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 470

MOTOROLA MODELS Y23K4W, 23K4W (CH. TS-558, Y)

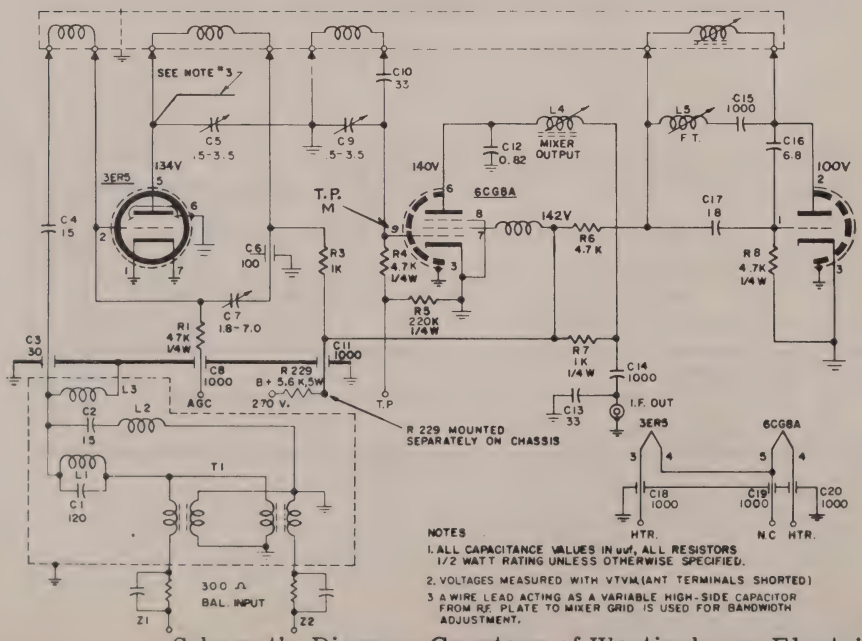
	Motorola Models A21KI31CW, A21KI32W, A21KI34W, A21KI35W, A21KI36W, Y21KI31CW, Y21KI32W, Y21KI34W, Y21KI35W, Y21KI36W, 21KI31CW, 21KI32W, 21KI34W, 21KI35W, 21KI36W (Ch. TS-558, Y, WTS-558) were covered in PHOTOFACT Folder 2 - Set 470. Models Y23K4W, 23K4W (Ch. TS-558, Y) are added along with late production changes with the publication of this bulletin.
Chassis Coding A-03	TO IMPROVE SIGNAL TO NOISE RATIO R51 is decreased from 2.2meg to 1.5meg. R10 is decreased from 15meg to 10meg. TO INCREASE TUBE SENTRY DELAY TIME M6 (Thermostat Assembly) is changed to Part #6K753334. DESIGN CHANGE C65 is deleted. R29 is relocated from the 270V A Source to the 270V Source.
Chassis Coding A-04	DESIGN CHANGE R15 is omitted. L3 is relocated from the junction of R14, C12 to ground. C10 is decreased from 10mmf to 6.8mmf.
Chassis Coding A-05	TO REDUCE THE POSSIBILITY OF REGENERATION A 3300Ω Resistor is added in series with the AGC Line and the Tuner. A 2X.001mfd Capacitor is added, the common lead connects to the chassis; one .001mfd Capacitor goes to the Tuner B +; the other .001mfd Capacitor goes to the Tuner Low B+.
Chassis Coding A-06	TO IMPROVE RASTER BLANKING WHEN CHANGING CHANNELS R33 is decreased from 470K to 220K. R34 is omitted.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 485

WESTINGHOUSE MODELS H-P3210, U, H-P3211, U (CH. V-2385-5, -6)

	Westinghouse Models H-P3200, U, H-P3300, U, H-P3301, U (Ch. V-2384-1, -2) were covered in PHOTOFACT Folder 2 - Set 485. Models H-P3210, U, H-P3211, U (Ch. V-2384-5, -6) are added along with late production changes with the publication of this bulletin.
Ch. V-2384-1, -2	TUNER CHANGE In late production a new Tuner (Part #470V067H01) is used. A schematic diagram showing the Tuner is given in this bulletin.

(CONTINUED ON THE REVERSE SIDE)



Schematic Diagram Courtesy of Westinghouse Electric Corp.

PHOTOFACT® Folder

ARKAY
MODEL FL-30

ARKAY
MODEL FL-30

ARKAY
MODEL FL-30

TRADE NAME	Arkay Model FL-30
MANUFACTURER	Arkay International, Inc., 88-06 Van Wyck Expressway, Jamaica 18, N. Y.
TYPE SET	AC Operated 6 Tube Audio Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 115 Watts, 1.15 Amp. @ 117 Volts AC

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KX087

DATE 10-60 SET 504 FOLDER 4

SET 504 FOLDER 4

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	AF Amplifier	6AV6
V2	AF Amp. -Phase Inv.	12AT7/ECC81
V3	Driver	12AU7/ECC82
V4	Output	EL34/6CA7
V5	Output	EL34/6CA7
V6	Rectifier	5U4GB

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N214	Preamplifier		2N649		2N214	NPN

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ARKAY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■40	450		AFH3-44	C0350	FP377	TMT-3748	TVL-3787	
B	▲40	450							
C	◀40	450							
C2	10	450		PRS1720	BR1045	TC72	TD-10-450	TVA-1705	
C3	12	15		XPP-15015	NLW15-25	TC43	ML15-25	TE-1156	
C4	20	10		XPP-10020	NLW20-15	TT15X20	ML20-15	TE-1130	Note 1
C5	100	12		PRS1150	BBR100-15	TC2501	TD-100-15	TVA-1160	
C6	50	50		PRS1350	BR505	TC39	TD-50-50	TVA-1308	Note 1

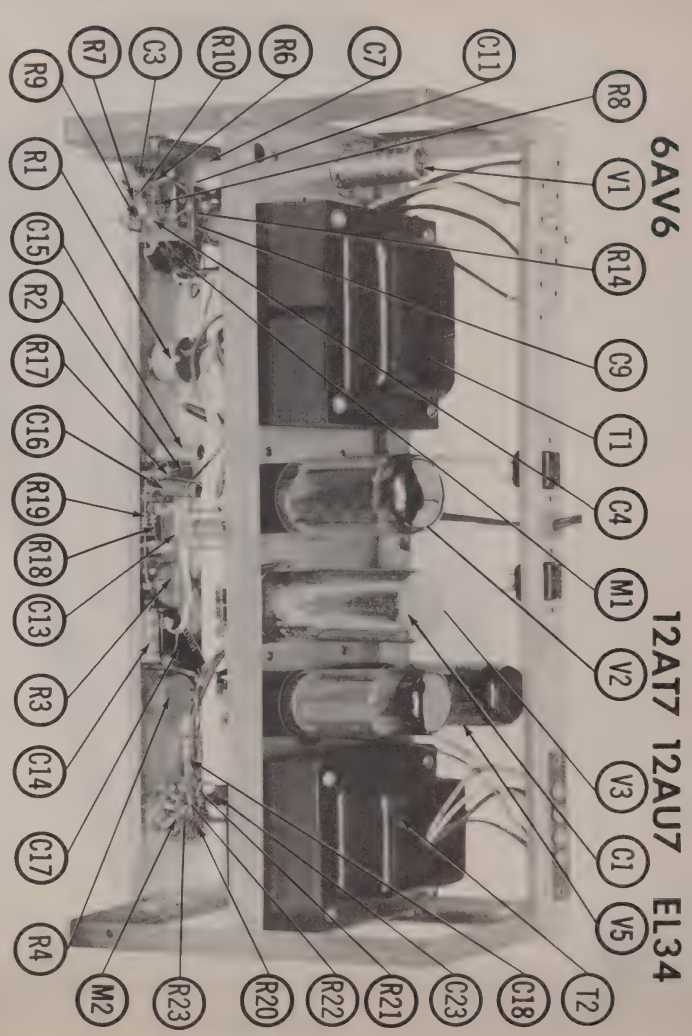
Note 1. Not used in some versions.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C8	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C9	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C10	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C11	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C12	270 10%		DI-270	DD-271	LI0T27	CCD-271	GP327	10TS-T27
C13	270 10%		DI-270	DD-271	LI0T27	CCD-271	GP327	10TS-T27
C14	.0047 400V		P488N-0047	D6-422	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C15	.0022 400V		P488N-0022	D6-222	CUB4D22	6DP-1-222	GEM-6222	6TM-D22
C16	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C17	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C18	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C19	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C20	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C21	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C22	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C23	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C24	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ARKAY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½		B-60-S	A47-500K-Z	Q13-133	U48	Loudness
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On
R2A	1meg	½	BA811-2688	B-69	A47-1meg-S	Q11-137	U54	Bass
B	Shaft			Not Req.	Not Req.	Not Req.	Not Req.	
R3A	1meg	½	BA811-2688	B-69	A47-1meg-S	Q11-137	U54	Treble
B	Shaft			Not Req.	Not Req.	Not Req.	Not Req.	
R4A	1meg	½	BA811-2688	B-69	A47-1meg-S	Q11-137	U54	Level
B	Shaft			Not Req.	Not Req.	Not Req.	Not Req.	
R5A	50Ω	2(WW)		WN-500	A43-50	W11-050	C50K	Hum Balance
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R6	3300Ω	
R7	33K	
R8	270Ω	Note 1
R9	220K	
R10	220K	
R11	68K	
R12	68K	
R13	1meg	
R14	100K	
R15	68K	
R16	1000Ω	
R17	100K	
R18	10K	

ITEM No.	RATING	REMARKS
R19	22K	
R20	100K	
R21	47K	
R22	22K	
R23	2200Ω	
R24	100K	
R25	82Ω	
R26	820Ω	
R27	47K	
R28	47K	
R29	470K	
R30	47K 1W	
R31	560Ω	

ITEM No.	RATING	REMARKS
R32	470K	
R33	47K 1W	
R34	1000Ω	
R35	100K	
R36	250Ω 7W	IRC#PW7-250Ω
R37	1000Ω	
R38	100K	
R39	33K	
R40	10K 2W	
R41	22Ω 1W	
R42	10K 1W	

Note 1. Not used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	ARKAY PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V@ 1.15A	750 VCT @ .140A	5V@ 3A	FL-30-F&V	P-2955		PM8412	24R07	R-21B	
	SEC. 3	SEC. 4	SEC. 5							
	6.3V@ 4.1A									

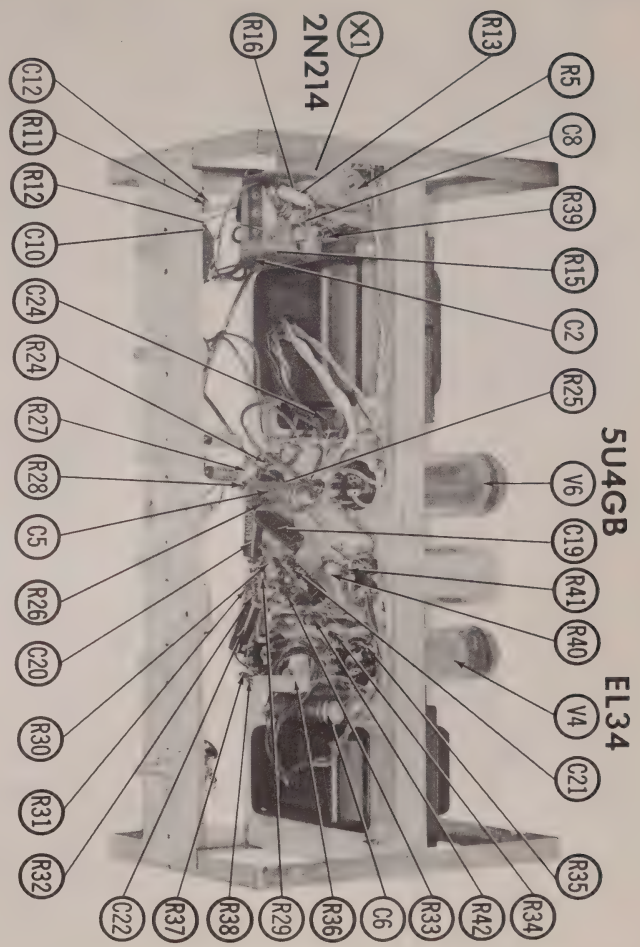
TRANSFORMER (AUDIO OUTPUT)

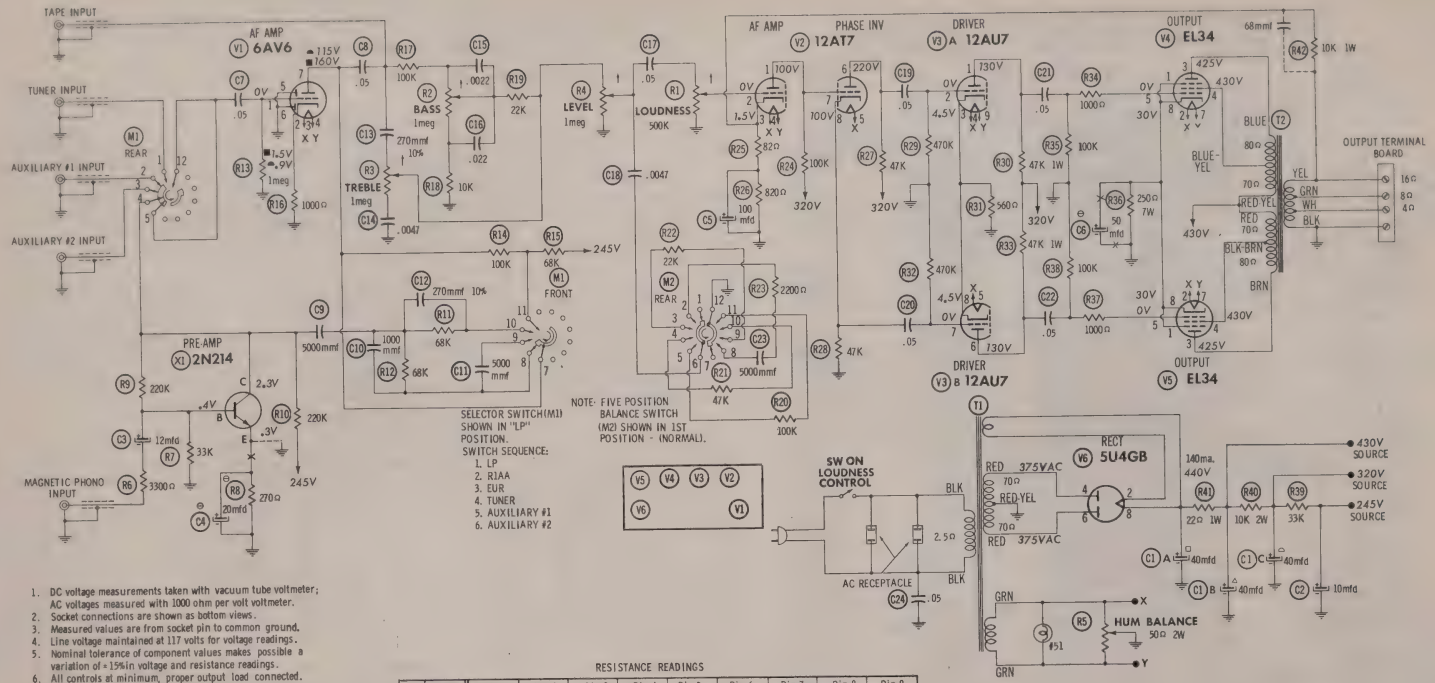
ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ARKAY PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5200Ω CT Tap@ 1700Ω CT	16Ω Tap @8Ω, 4Ω							

MISCELLANEOUS

ITEM No.	PART NAME	ARKAY PART No.	NOTES
M1	Switch		Function (Rotary Wafer Type)
M2	Switch		Balance (Rotary Wafer Type)

CHASSIS—BOTTOM VIEW





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AV6	1meg	1000Ω	14Ω	14Ω	0Ω	0Ω	◓ ↑210K ■ ↑110K		
V2	12AT7 ECC81	↑110K	0Ω	900Ω	14Ω	14Ω	↑57K	↑110K	47K	14Ω
V3	12AU7 ECC82	↑57K	470K	560Ω	14Ω	14Ω	↑57K	470K	560Ω	14Ω
V4	EL34 6CA7	250Ω	14Ω	↑170Ω	↑90Ω	100K	TP	14Ω	250Ω	
V5	EL34 6CA7	250Ω	14Ω	↑170Ω	↑90Ω	100K	TP	14Ω	250Ω	
V6	5U4GB	TP	¶	NC	70Ω	NC	70Ω	NC	¶	

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N214	33K	270Ω	↑260K

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
↑ MEASURED FROM PIN 8 OF V6.
◓ MEASURED WITH SELECTOR SWITCH IN LP, RIAA, OR EUR POSITION. NC NO CONNECTION
■ MEASURED WITH SELECTOR SWITCH IN TUNER, AUX 1, OR AUX 2 POSITION. TP TIE POINT
TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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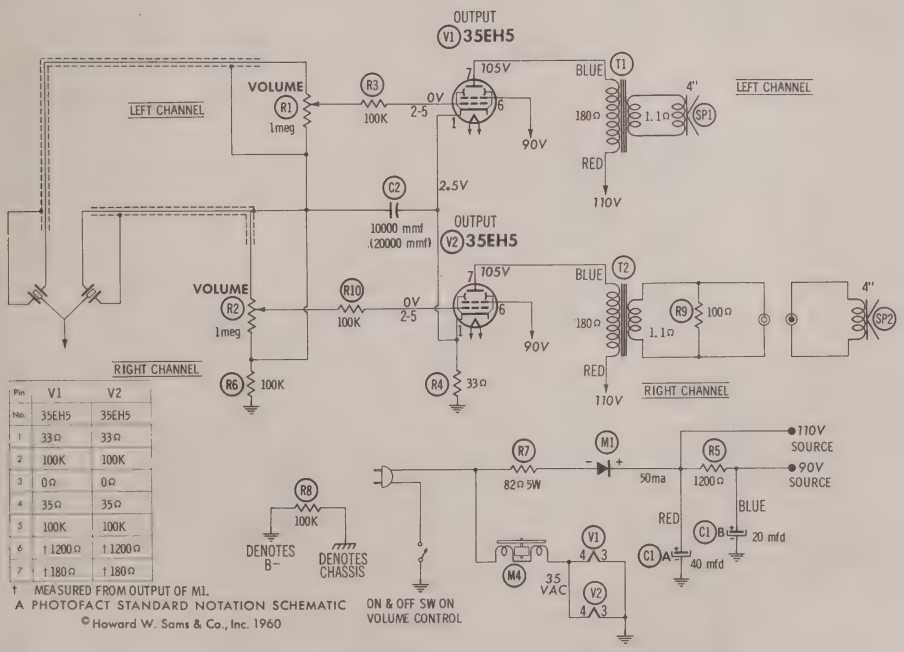
ARKAY
MODEL FL-30

PHOTOFACT® Folder

ARVIN MODEL 2094 (Ch. 1.49400)

ARVIN MODEL
2094 (Ch. 1.49400)

TRADE NAME	Arvin Model 2094 (Ch. 1.49400)
MANUFACTURER	Arvin Industries, Inc., Columbus, Indiana
TYPE SET	AC Operated 2 Tube Stereo Phono Amplifier With 3 Speed Manual Record Player
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 45 Watts, .42 Amp. @ 117 Volts AC (With Motor)



Pin No.	V1	V2
1	33Ω	33Ω
2	100K	100K
3	0Ω	0Ω
4	35Ω	35Ω
5	100K	100K
6	†1200Ω	†1200Ω
7	†180Ω	†180Ω

† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ARVIN MODEL
2094 (Ch. 1.49400)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	Left Channel Output	35EH5
V2	Right Channel Output	35EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	150	45952-4	PRS2180	BBRD4215	TCD485	TDLD-5	TVA-2438	
B	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	EMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10000	(20000) †	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

† Alternate Value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	ARVIN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	47500-5	B-70-S	A47-1meg-Z	Q13-137	U53	Volume, Left Channel
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On
R2A	1meg	½	47500-6	B-70	A47-1meg-Z	Q13-137	U53	Volume, Right Channel
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	100K	
R4	33Ω	
R5	1200Ω	

ITEM No.	RATING	REMARKS
R6	100K	
R7	82Ω 5W	IRC#PW5-82Ω
R8	100K	

ITEM No.	RATING	REMARKS
R9	100Ω	
R10	100K	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	ARVIN PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2500Ω	6-8Ω	46200-6						
T2	2500Ω	6-8Ω	46200-5						

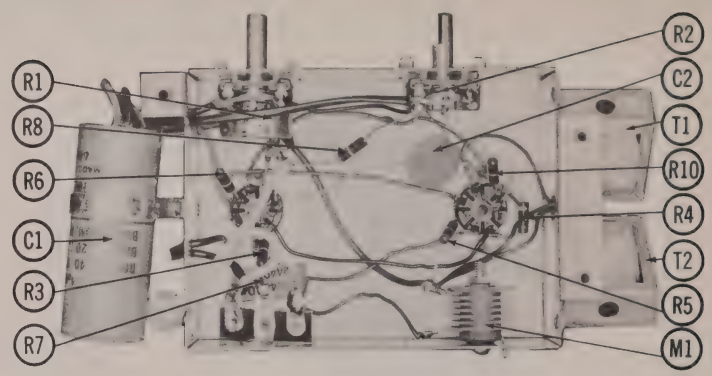
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	ARVIN PART No.	QUAM PART No.	NOTES
SP1	4"	PM	6-8Ω	44088	4A1Z4.6	
SP2	4"	PM	6-8Ω	44088	4A1Z4.6	

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	ARVIN PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.050A	46140-2 *	1234AH *	1N1763 ♦	65 *	SR200 ♦	* Selenium Type ♦ Silicon Type

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	ARVIN PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2		74TS	N8-3 N8-7	96T		49	CRA-55 or CRA-55D and CRA-55LP or CRA-55LPD	12TH-S	

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	ARVIN PART No.	JENSEN PART No.	REMARKS
M3			

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M4	Motor	47681-1	Turntable Drive

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	47580	Volume
Knob	47922	Volume
Cabinet	47843-117	White
Cabinet	47855-117	White, Speaker

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

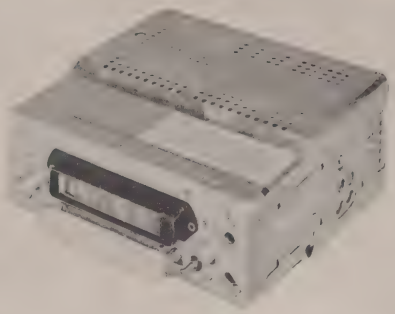
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

BLAUPUNKT
MODEL 9180



TRADE NAME	Blaupunkt Model 9180 (Serial #Q200001)
IMPORTER	Robert Bosch Corp., 40-25 Crescent Street, Long Island City 1, N. Y.
TYPE SET	Battery Operated 5 Tube Universal Type Automobile AM Receiver
POWER SUPPLY	Storage Battery (6 or 12 Volt) RATING 2.8 Amp. @12.6 Volts DC (or)
TUNING RANGE—BROADCAST	519 — 1650KC 4.5 Amp. @6.3 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Depress Treble Bar.

Suggested Alignment Tools:
A1 thru A5, A9... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A6, A7..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to antenna receptacle. Low side to chassis.	460KC (400~ Mod.)	1500KC	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	"	"	A5	Adjust for MINIMUM output.
3.	To antenna receptacle thru dummy (Fig. 1).	1100KC	1100KC	"	A6, A7	Adjust for maximum output.
4.	"	519KC	Low end stop.	"	A8, A9	"

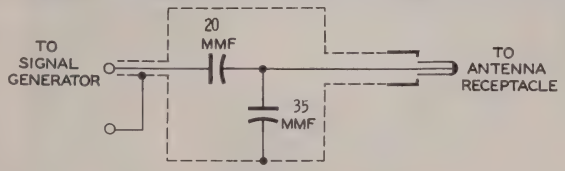
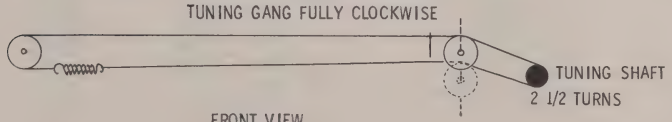


FIG. 1

DIAL CORD STRINGING



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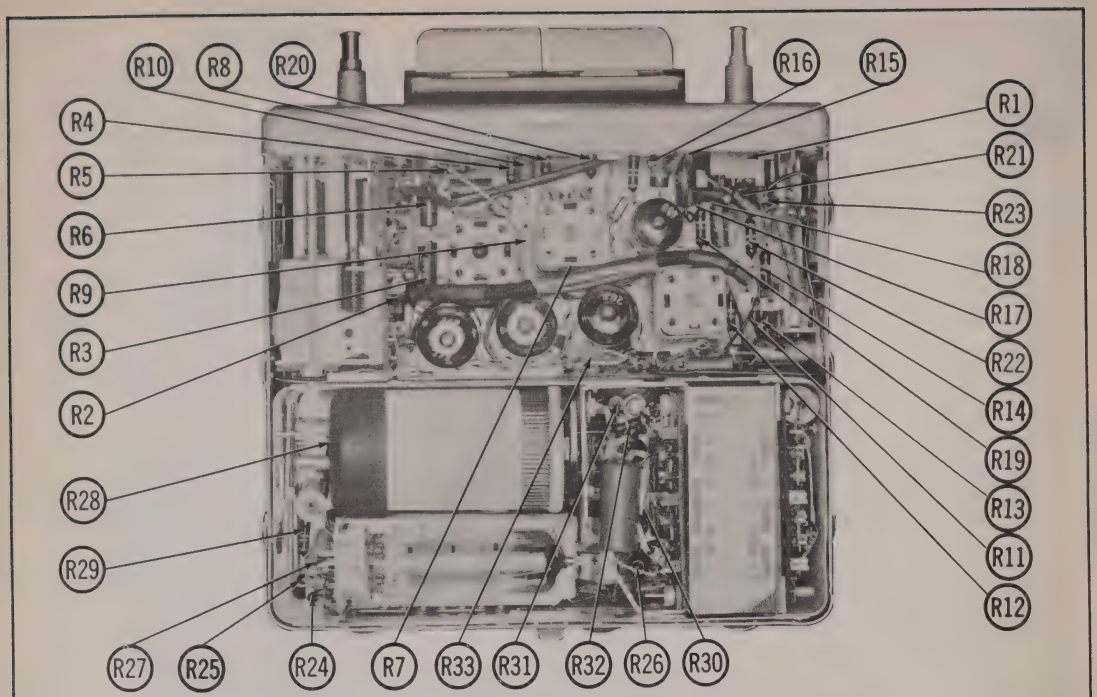
KD029

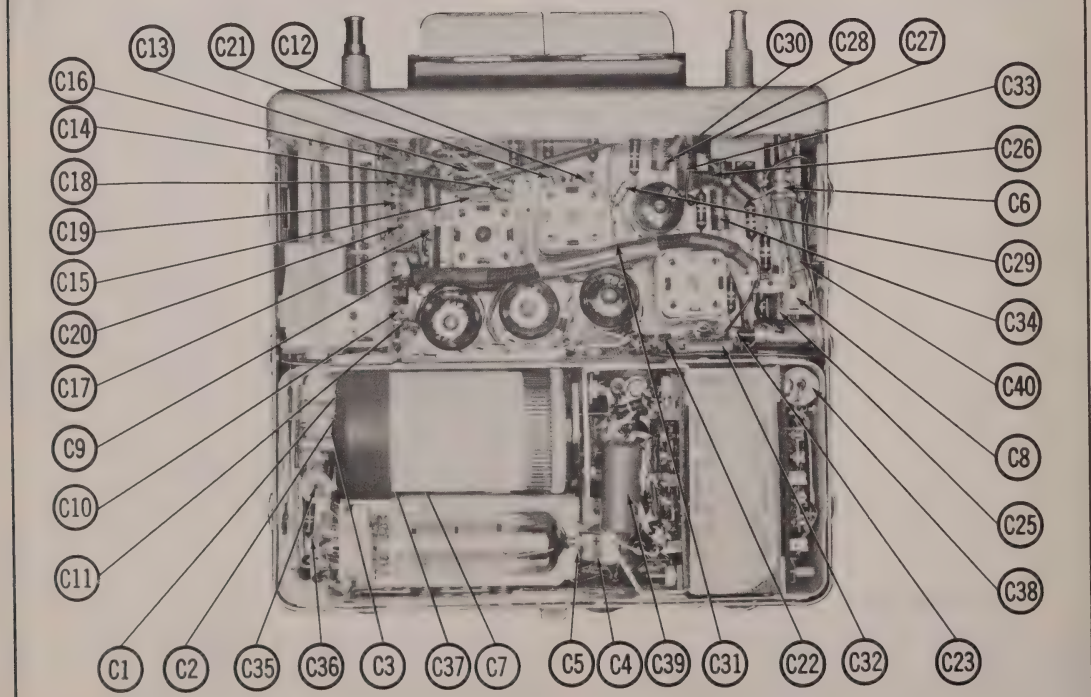
BLAUPUNKT
MODEL 9180

BLAUPUNKT
MODEL 9180

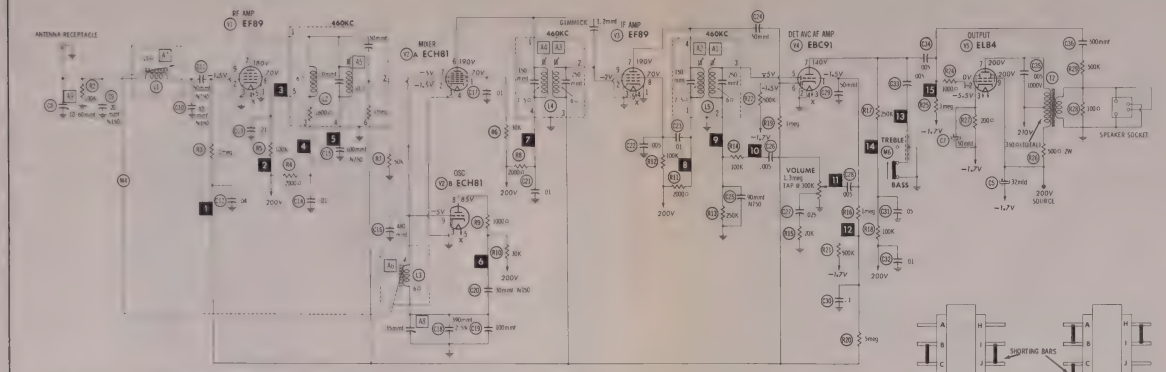
SET 504 FOLDER 6



CHASSIS TOP VIEW—RESISTOR IDENTIFICATION



CHASSIS TOP VIEW—CAPACITOR IDENTIFICATION



RESISTANCE READINGS

TUBE	SOCKET	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	EF89	0Ω	1.7meg	0Ω	0Ω	0Ω	0Ω	4000Ω	1.1MΩ	0Ω
V7	ECH81	1.1MΩ	1.7meg	0Ω	0Ω	0Ω	2500Ω	50K	1.1MΩ	50K
V2	ECH81	0Ω	INDC	0Ω	1.4MΩ	0Ω	0Ω	2500Ω	1.1MΩ	0Ω
V4	EBC91	1.7meg	0Ω	0Ω	0Ω	250K	400K	350K		
V5	EL84	0Ω	1meg	200Ω	0Ω	0Ω	NC	1MΩ	NC	150Ω

* MEASURED FROM OUTPUT OF MZ. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of +15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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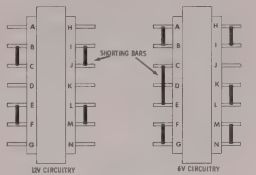
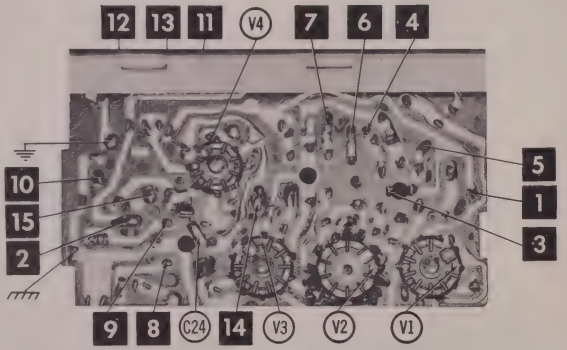
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

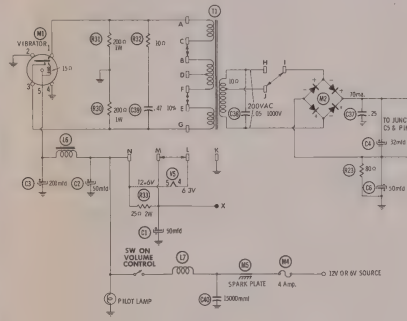




A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



BLAUPUNKT
MODEL 9180

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	◆ GENERAL ELECTRIC ◆		RAYTHEON ◆	SYLVANIA ◆	
V1	RF Amplifier	EF89	V4	Det. -AVC-AF Amp.	EBC91
V2	Mixer-Osc.	ECH81	V5	Output	EL84
V3	IF Amplifier	EF89			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BLAUPUNKT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	50	15		XPP-15050	BBR50-25	TT15X50	ML50-15	TE-1160	
C2	50	15		XPP-15050	BBR50-25	TT15X50	ML50-15	TE-1160	
C3	200	15		PRS1210	BR2501	TC1502	TD-250-15	TE-1164	
C4	32	400		PRS1740	BR3045	TC77	TD-30-450	TVA-1711	
C5	32	400		PRS1740	BR3045	TC77	TD-30-450	TVA-1711	
C6	50	6		XPP-6050	NLW50-6	TT6X50	ML50-6	TE-1100	
C7	50	12		XPP-12050	BBR50-25	TT15X50	ML50-15	TE-1133	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	10-60					404		
C9	20 N150					*		10TCP-Q22
C10	65 N150					*		10TCP-Q68
C11	50 N750		N750-SI 50	TCN-50	C10Q5U	CCTN-470	CN7-447	10TCU-Q47
C12	.04 150V		P288N-04		CUB6S4	4DP-3-403	GEM-414	4TM-S4
C13	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-SI
C14	.01 150V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-SI
C15	100 N750		N750-SI 100	TCN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C16	480		SI 470	D6-471	BYA10T47	CCD-471	B-347	10TS-T47
C17	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-SI
C18	390 2.5%					VCM-20-391G	MCE243	
C19	100		SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C20	30 N150					*		10TCP-Q33
C21	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-SI
C22	.005 400V		P488N-005	D6-502	CUB6D5	6DP-1-502	GEM-625	6TM-D5
C23	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-SI
C24	50		SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C25	90 N750		N750-SI 91	TCN-91	C10Q91U	CCTN-101	CN7-310	10TCU-T10
C26	.005 125 V		P288N-005	D6-502	CUB6D5	6DP-1-502	GEM-625	6TM-D5
C27	.025 125V		P288N-025		DPMS6S25	4DP-2-253	GEM-4125	4TM-S25

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C28	.005 400V		P488N-005	D6-502	CUB6D5	6DP-1-502	GEM-625	6TM-D5
C29	50		SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C30	.1 125V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C31	.05 500V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5
C32	.01 400V		P488N-01	D6-103	CUB4S1	4DP-3-103	GEM-411	4TM-SI
C33	.005 125V		P288N-005	D6-502	CUB6D5	6DP-1-502	GEM-625	6TM-D5
C34	.005 400V		P488N-005	D6-502	CUB6D5	6DP-1-502	GEM-625	6TM-D5
C35	.005 1000V		P1088N-005	DD-502	CUB10D5	10DP-2-502	GEM-1025	10TM-D5
C36	500		BPD-0005	D6-501	BYA10T5	CCD-501	B-350	10TS-T50
C37	.25 250V		P488N-25		CUB4P25	4DP-5-254	GEM-4025	2TM-P25
C38	.05 1000V		P1088N-05		CUB10S5	10DP-5-503	GEM-1015	10TM-S5
C39	.47 125V 10%		V84C2P47-10%		PM2P47	2DP-5-474	GEM-2047	2TM-P47
C40	15000		BPD-015	DD-153	BYA10S15	CCD-153	B-115	5HK-S15

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BLAUPUNKT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1.3meg 300K Tap	½		ABT-73				Volume
B	Shaft			AK-29				
C	Bushing			AK-31				
D	Switch			KR-7				Power Off-On

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	100K	
R3	1meg	
R4	2000Ω	
R5	100K	
R6	30K 1W	
R7	50K	
R8	2000Ω	
R9	1000Ω	
R10	30K 1W	
R11	2000Ω	
R12	100K	

ITEM No.	RATING	REMARKS
R13	250K	
R14	100K	
R15	20K	
R16	1meg	
R17	250K	
R18	100K	
R19	1meg	
R20	5meg	
R21	500K	
R22	500K	
R23	80Ω	

ITEM No.	RATING	REMARKS
R24	1000Ω	
R25	1meg	
R26	500Ω 2W	
R27	200Ω	
R28	100Ω	
R29	500K	
R30	200Ω 1W	
R31	200Ω 1W	
R32	10Ω	
R33	25Ω 2W	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		BLAUPUNKT PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil					
L2	RF Trans.					
L3	Osc. Coil					
L4	Input IF Trans.					
L5	Output IF Trans.					
L6	Hash Choke					
L7	"A" Lead Hash Choke					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	BLAUPUNKT PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	12.6 VCT 1.4A	200V Ⓐ .070A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	BLAUPUNKT PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5000Ω Tap Ⓐ 5%	3-4Ω							

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				BLAUPUNKT PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interruptor	12.6	115v	SM0702/02Z				

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	BLAUPUNKT PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M2	.070A	*					* Bridge Type Selenium

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BLAUPUNKT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3		4A						

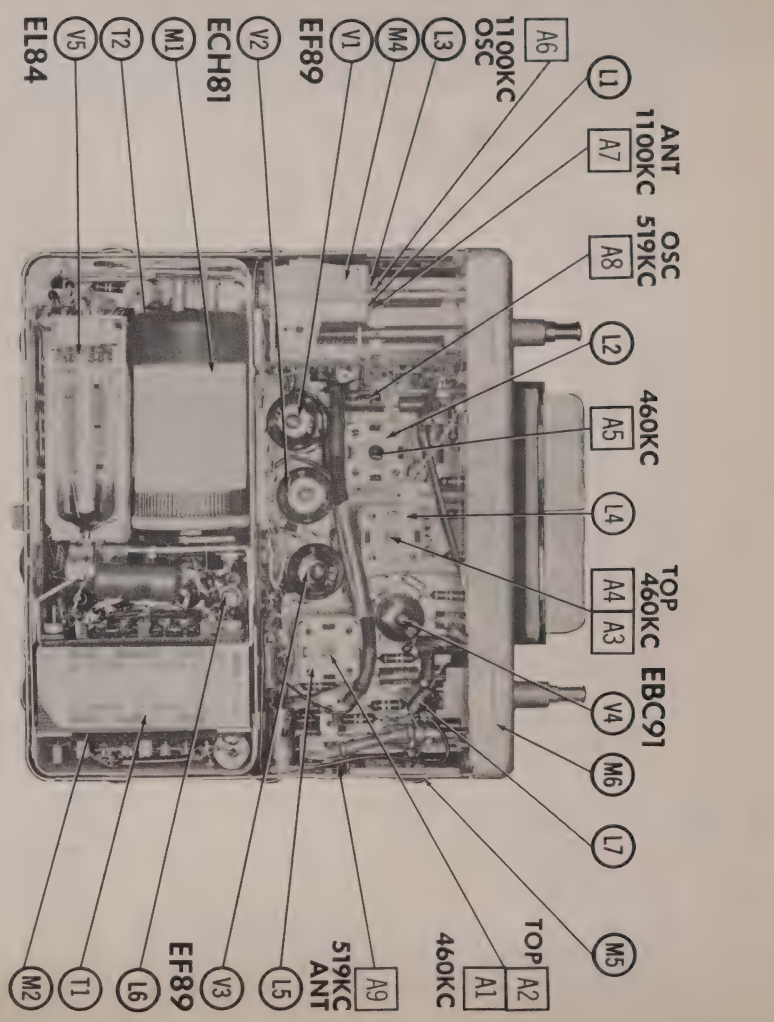
MISCELLANEOUS

ITEM No.	PART NAME	BLAUPUNKT PART No.	NOTES
M4	Tuner		Complete
M5	Spark Plate		
M6	Switch		Bass-Treble (Pushbutton Type)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

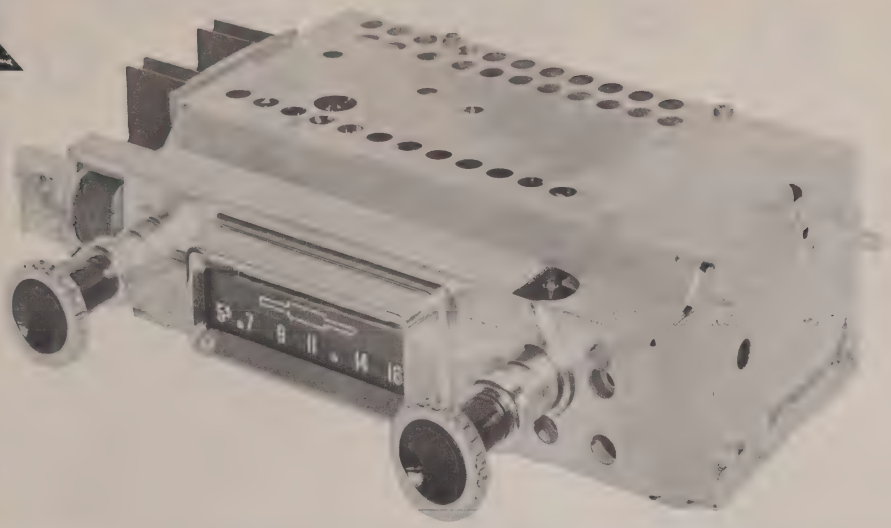
CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE™

CHEVROLET MODEL 988080
GMC MODEL 2233850

CHEVROLET MODEL 988080
GMC MODEL 2233850



TRADE NAME	Chevrolet Model 988080(For 1960 Chevrolet Trucks) G.M.C. Model 2233850(For 1960 G.M.C. Trucks)
MANUFACTURER	Delco Radio Div., G.M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated 3 Tube, 2 Transistor Custom Built Truck AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 1.6 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	535 – 1615KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

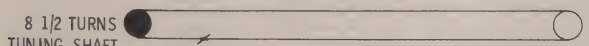
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4...GENERAL CEMENT #9440
A5, A9, A10...GENERAL CEMENT #8282, 8606, 8606-L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544
A6, A7, A8...GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262KC (400% Mod.)	High freq. end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Check setting of Oscillator core (A5). Rear of core should be 1 5/8" from mounting end of coil form.					
2.	High side thru 82mmf to Ant. receptacle. Low side to chassis.	1615KC	High freq. end stop.	Across voice coil.	A6, A7 A8	Adjust for maximum output.
3.	"	600KC	600KC Signal.	"	A9, A10	"
4.	"	1615KC	1615KC Signal.	"	A7, A8	"
5.	With radio installed in car and antenna fully extended, tune in a weak station near 900KC and adjust A8 for maximum output.					

DIAL CORD STRINGING

TUNING SHAFT FULLY COUNTER CLOCKWISE



FRONT VIEW

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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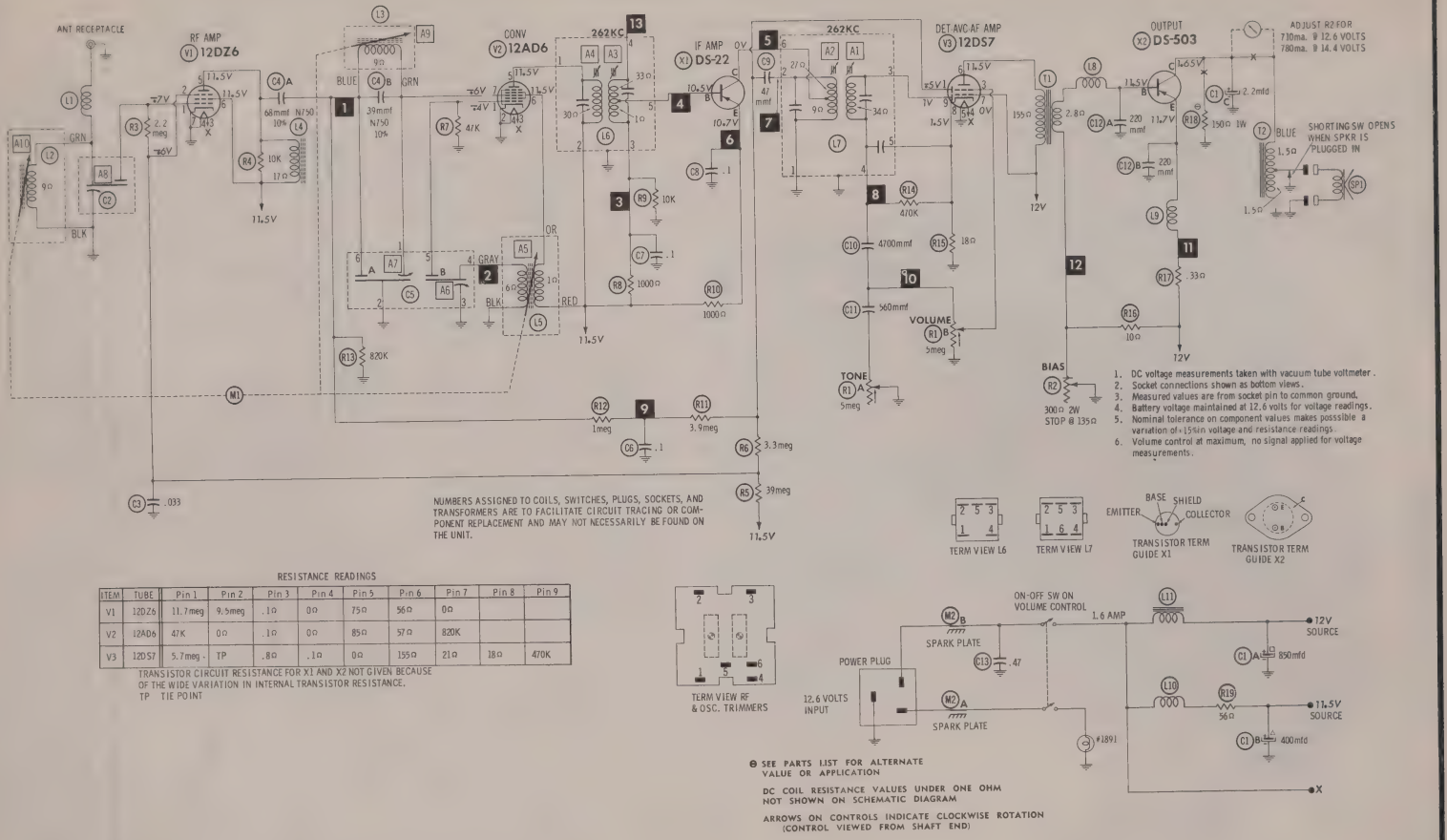
KDI08

SET 504 FOLDER 7



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	11.7meg	9.5meg	.1Ω	0Ω	75Ω	56Ω	0Ω		
V2	12AD6	47K	0Ω	.1Ω	0Ω	85Ω	57Ω	820K		
V3	12DS7	5.7meg -	TP	.8Ω	.1Ω	0Ω	155Ω	21Ω	18Ω	470K

TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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CHEVROLET MODEL 988080
GMC MODEL 2233850

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12DZ6	V3	Det.-AVC-AF Amp.	12DS7
V2	Converter	12AD6			

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	DS-22	IF Amplifier					PNP
X2	DS-503	Output	2N235A				PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■850	16	7273730	AFH3-54-30		WP300.6		TVLS-3021 *	
B	▲400	16							
C	2.2	11.5							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2		#7275120						
C3	.033 75V		P288N-033	DD-303	PM4S33	1DP-2-333	GEM-4133	6TM-S33
C4A	68 N750 10%		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
B	39 N750 10%			TCN-39	C10Q39U	CCTN-390	CN7-439	10TCU-Q39
C5A		#7273697						
B								
C6	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C7	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C8	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C9	47		1468-000047	DD-470	5W5Q47	CM-19B-470M	GP447	1FM-447
C10	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C11	560		DI-560	DD-561	L10T56	CCD-561	GP356	10TS-T56
C12A	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
B	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C13	.47 100V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47

\# Delco Part Number.

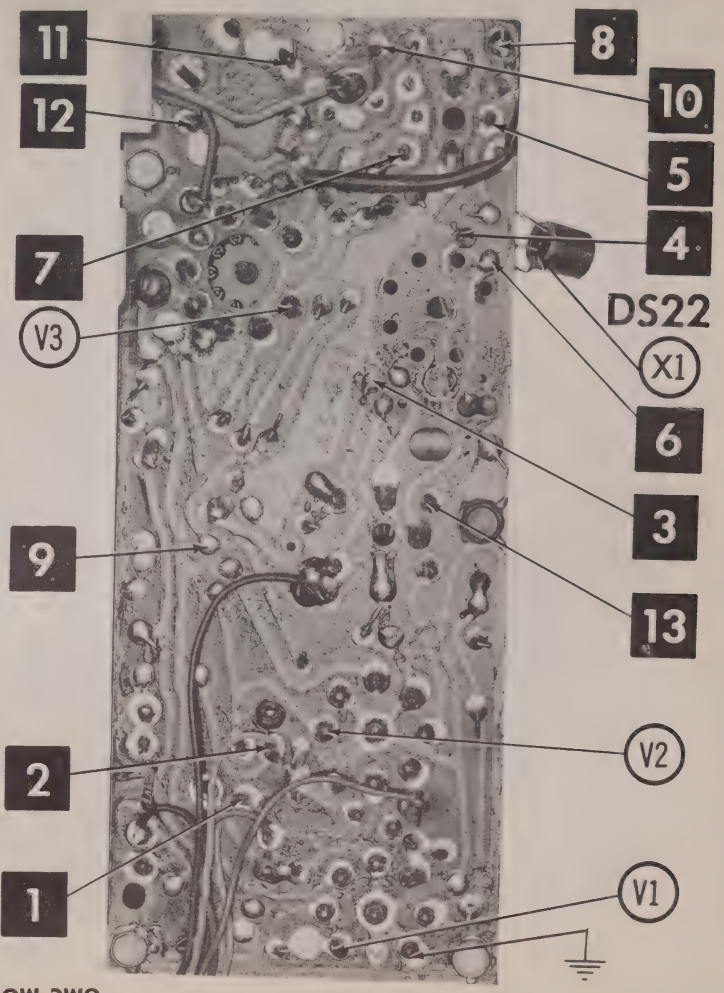
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	5meg	1/2	7275629					Tone
B	5meg	1/2						Volume
C	Switch							Power Off-On
R2	300Ω 135Ω Stop	2(WW)	7275474					Bias

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



CHEVROLET MODEL 9880B0
GMC MODEL 2233B50

FOLDER 7

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	2.2meg	
R4	10K	
R5	39meg	
R6	3.3meg	
R7	47K	
R8	1000Ω	

ITEM No.	RATING	REMARKS
R9	10K	
R10	1000Ω	
R11	3.9meg	
R12	1meg	
R13	820K	
R14	470K	

ITEM No.	RATING	REMARKS
R15	18Ω	
R16	10Ω	
R17	.33Ω	#7274329
R18	150Ω 1W	Note 1
R19	56Ω	

Delco Part Number. Fuse Type.
Note 1. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		DELCO PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	RF Choke	7255738	BC-565	4610		6.5uh
L2	Ant. Coil	1221138				
L3	RF Coil	1221138				
L4	RF Choke	7269684	BC-514	4664		1.8MH
L5	Osc. Coil	1221263				
L6	Input IF Trans.	7275770				
L7	Output IF Trans.	1221255				
L8	RF Choke	1217846				1.4uh
L9	RF Choke	1217846				1.4uh
L10	Hash Choke	1217846				1.4uh

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	DELCO PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L11	.750A	.7Ω	.011 HY	7274342			TC-2			

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	4.4	1	1221425		TA-48			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA						NOTES
	PRI.	DELCO PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	15Ω Tap ⓐ 3-4Ω	1221431						

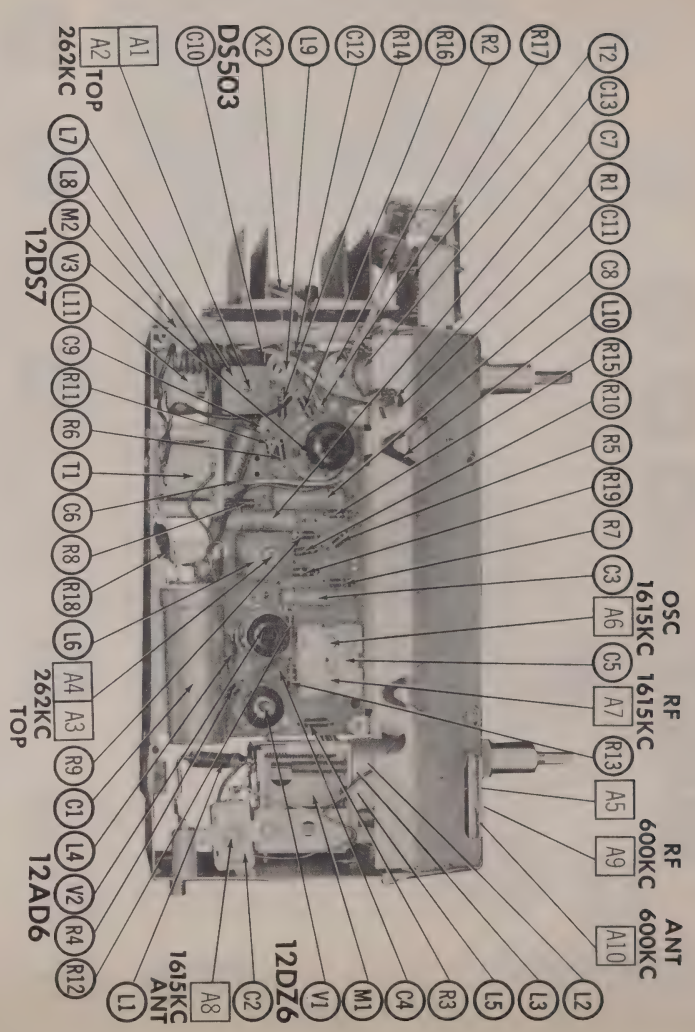
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	6"x 9"	PM	3-4Ω	7275457	69A2	

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner	1220885	Manual
M2A	Spark Plate		Dial Lite
B	Spark Plate		"A" Lead

CHASSIS—TOP VIEW



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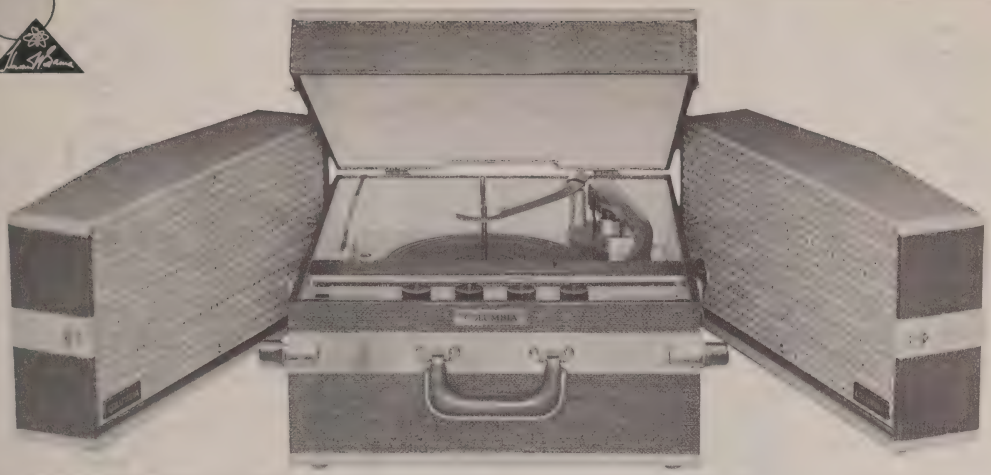
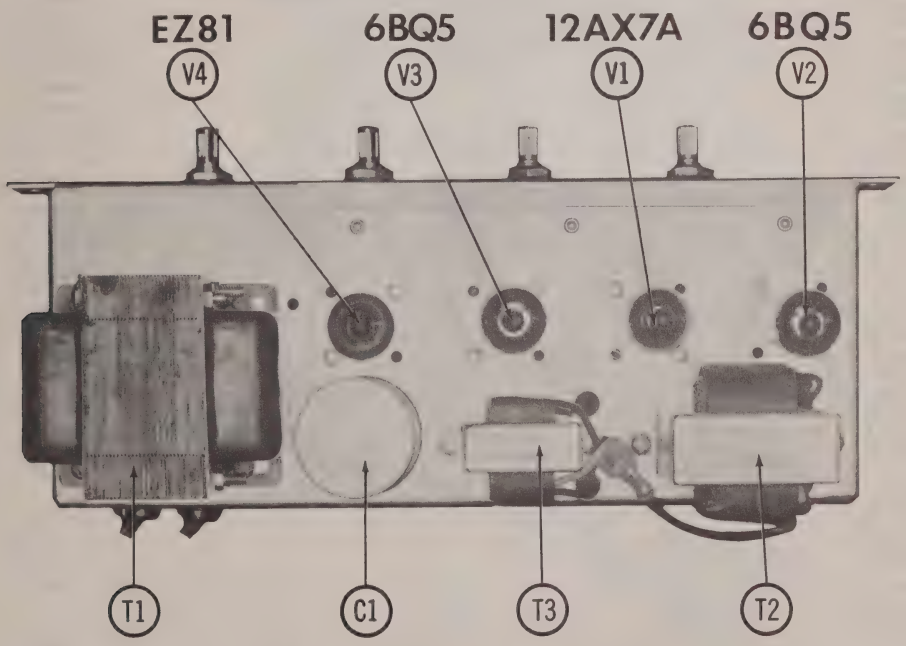
COLUMBIA MODEL C-1014T



TRADE NAME	Columbia Model C-1014T
MANUFACTURER	CBS Electronics, 100 Endicott Street, Danvers, Mass.
TYPE SET	AC Operated 4 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 -120 Volts AC, 60 Cycles RATING 58 Watts, . 57 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR V-M 1201 — PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12



COLUMBIA MODEL C-1014T

COLUMBIA MODEL C-1014T

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KT012

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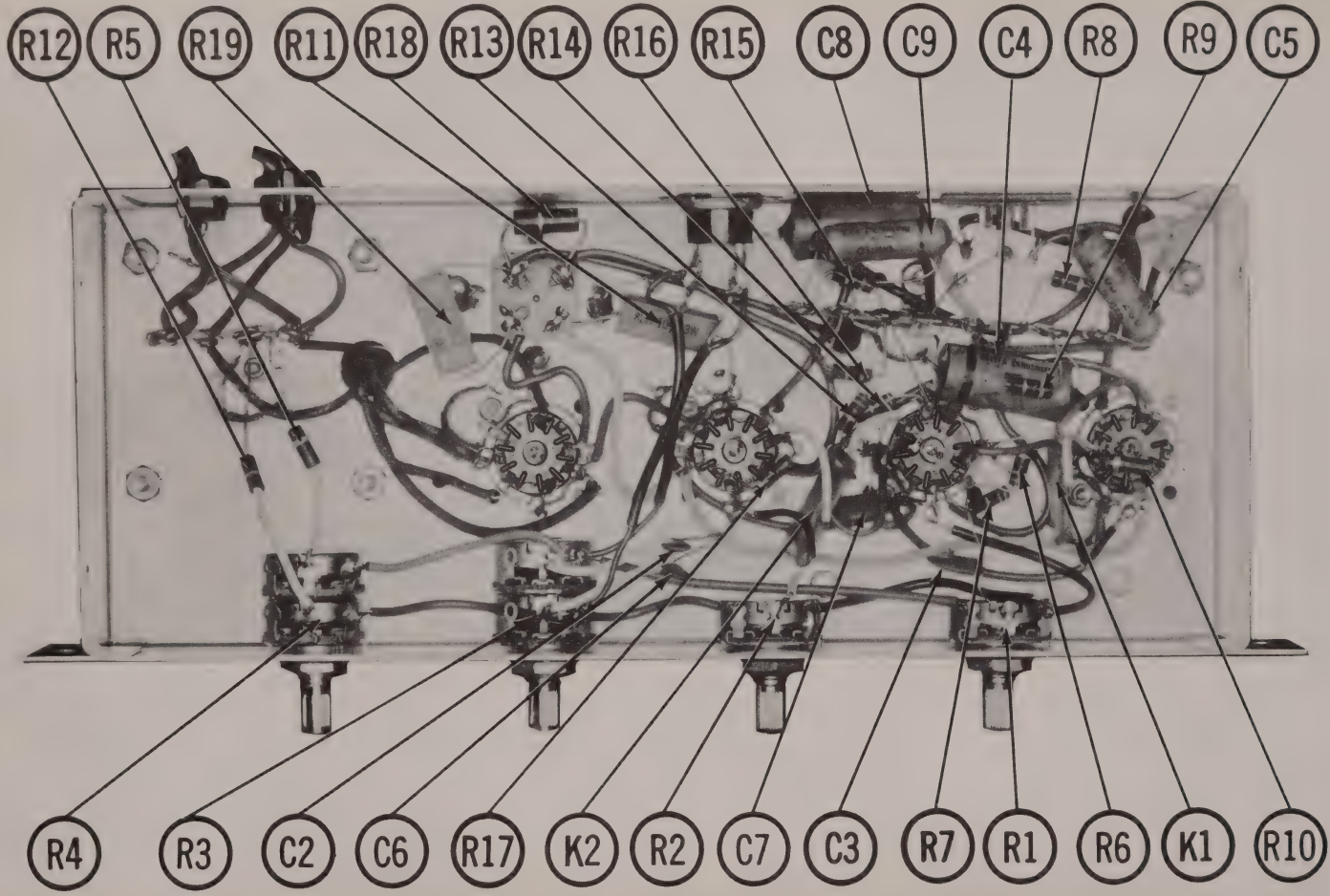


CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	Channel A AF Amp. - Channel B AF Amp.	12AX7A (ECC83) *
V2	Channel A Output	6BQ5 (EL84) *
V3	Channel B Output	6BQ5 (EL84) *
V4	Rectifier	EZ81/6CA4

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▰60	400	①	AFH4-79-10	D0478	FP421.6	TMQ-4379	TV1S-4671.1*	
B	■40	350							
C	▲40	300	①						
D	50	25							

① C1C may be 20mfd in some versions (C1 Part #11B758).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C3	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C4	.25 200V		P288N-25		CUB2P25	2DP-4-254	GEM-2025	2TM-P25
C5	.05 200V		P288N-05	DF-503	CUB2S5	2DP-4-503	GEM-215	2TM-S5
C6	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	.25 200V		P288N-25		CUB2P25	2DP-4-254	GEM-2025	2TM-P25
C9	.05 200V		P288N-05	DF-503	CUB2S5	2DP-4-503	GEM-215	2TM-S5

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	½	9B584	B-85	A47-3meg-Z	Q13-140	U57	Loudness, Channel A
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	3meg	½	9B584	B-85	A47-3meg-Z	Q13-140	U57	Loudness, Channel B
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	500K	½	9B614	B-60	AD47-500K-Z		FA55A	Treble, Channel B
B	500K	½		SR-60	Not Req.		RU55A	Treble, Channel A
C	Shaft			Not Req.	KSS-3		CS3500	
R4A	3meg	½	9B613	B-85			FC36A	Bass, Channel B
B	3meg	½		SR-85			RU36A	Bass, Channel A
C	Shaft			Not Req.			CS3500	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	100K	
R6	6.8meg	
R7	680Ω	
R8	5600Ω	
R9	270Ω	

ITEM No.	RATING	REMARKS
R10	1000Ω	
R11	82Ω 3W	IRC#PW3-82Ω
R12	100K	
R13	6.8meg	
R14	680Ω	

ITEM No.	RATING	REMARKS
R15	5600Ω	
R16	270Ω	
R17	1000Ω	
R18	1200Ω 1W	
R19	270Ω 5W	IRC#PW5-270Ω

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	COLUMBIA PART No.	REPLACEMENT DATA	
K1	Audio Coupling	250mmf, 10000mmf, 220K, 470K	5B311	Aerovox Centralab Cornell-Dubilier Sprague	PA-112-4 PC-81 113TM2 T-2
K2	Audio Coupling	250mmf, 10000mmf, 220K, 470K	5B311	Aerovox Centralab Cornell-Dubilier Sprague	PA-112-4 PC-81 113TM2 T-2

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V⓪ .57A	500 VCT .095A	6.3V⓪ 2.7A	2B119	P-3148①		PC8420①	24R13U①②		

① Drill New Mounting Holes.
② Tape 5V Winding And Center Tap On 6.3V Winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	4700Ω CT	3-4Ω CT	3B250						
T3	3300Ω	3-4Ω	3B251						

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA COLUMBIA PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	1B108	6A21	
SP2	4"	PM	3-4Ω	1B153	3A07	
SP3	2"	PM	3-4Ω	1B154	25A07	
SP4	6"	PM	3-4Ω	1B108	6A21	
SP5	4"	PM	3-4Ω	1B153	3A07	
SP6	2"	PM	3-4Ω	1B154	25A07	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA COLUMBIA PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M1	CD-SC-1	13TB		26S	S1-1 & S3-3			8TA4-S	N-8TA-S

PHONO NEEDLE

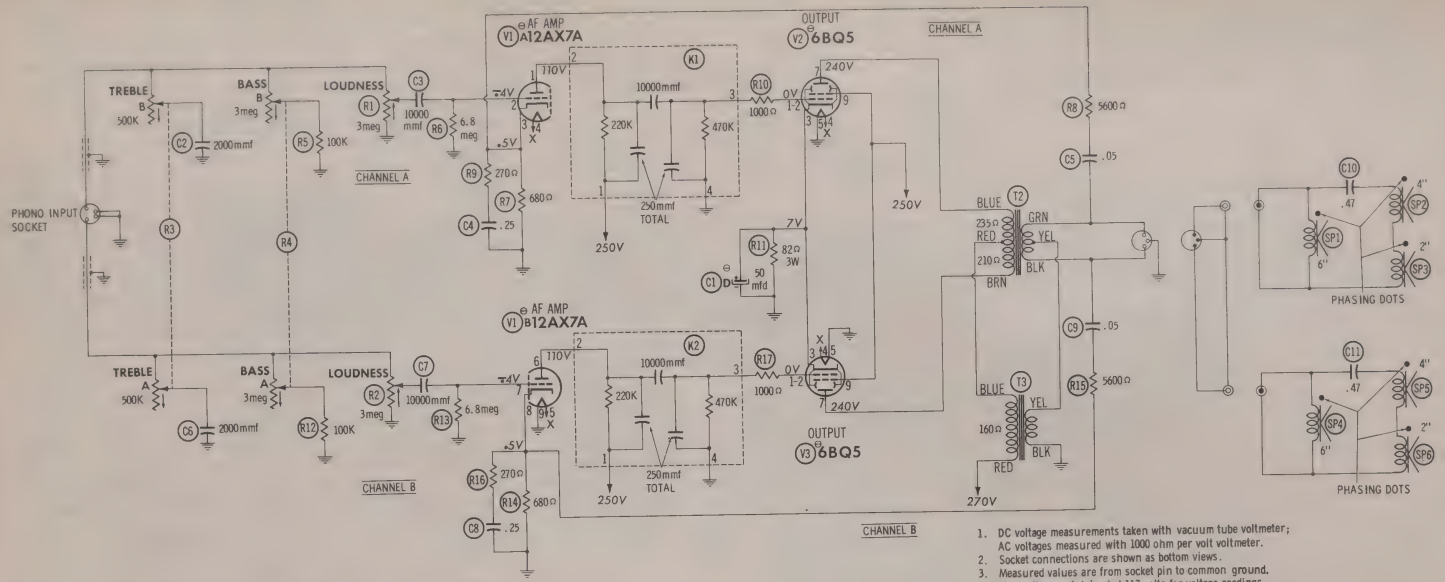
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA COLUMBIA PART No.	REPLACEMENT DATA JENSEN PART No.	REMARKS
M2		CS-1X † or CS-1XD ♦	† Jewel ♦ Diamond

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	8B518	Loudness, Bass, Treble
Cabinet	17B688	

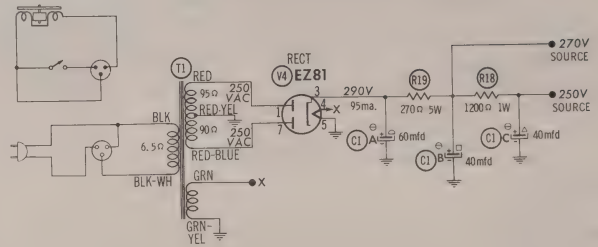


1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7A	†220K	6.8meg	680Ω	.1Ω	.1Ω	†220K	6.8meg	680Ω	0Ω
V2	6BQ5	470K	470K	82Ω	.1Ω	0Ω	TP	†665Ω	NC	†1500Ω
V3	6BQ5	470K	470K	82Ω	.1Ω	0Ω	NC	†640Ω	TP	†1500Ω
V4	EZ81 6CA4	95Ω	NC	¶	.1Ω	0Ω	NC	90Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 3 OF V4. TP TIE POINT NC NO CONNECTION



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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COLUMBIA MODEL C-1014T

MODEL 610G

TRADE NAME	Columbia Model 610G, 610R		
MANUFACTURER	CBS Electronics, 100 Endicott Street, Danvers, Mass.		
TYPE SET	Battery Operated Transistorized AM Receiver (Portable or Table Model)		
POWER SUPPLY	9 Volts DC	RATING	8 MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	510 – 1620KC		10 MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A5, A7.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to base of Converter. Low side to chassis.	460KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	Loop	510KC	Tuning gang fully closed.	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1620KC	Tuning gang fully open.	"	A5	Adjust for maximum output. Repeat Steps 2 and 3.
4.	"	560KC	560KC Signal.	"	A6	Adjust for maximum output.
5.	"	1450KC	1450KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 4 and 5.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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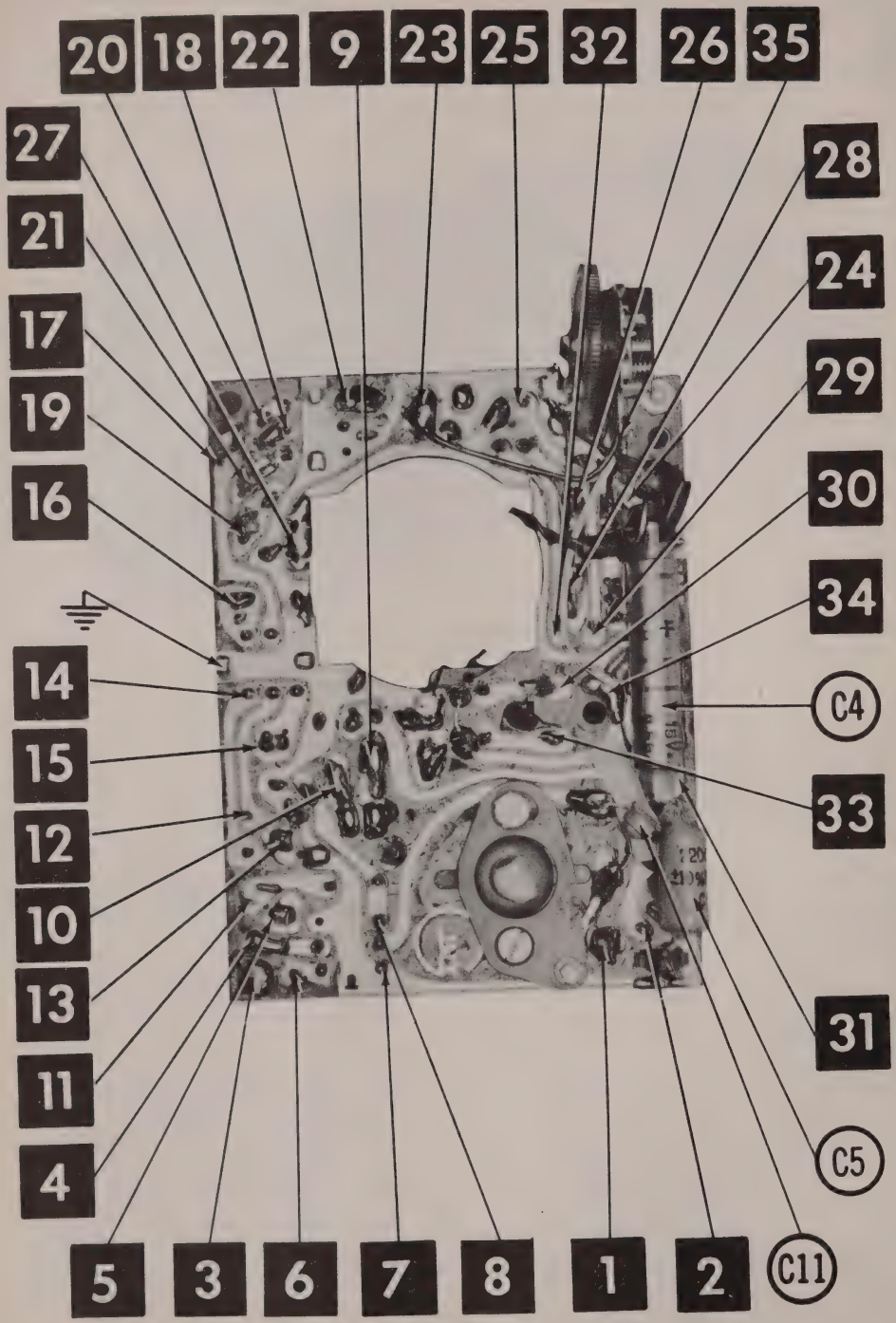

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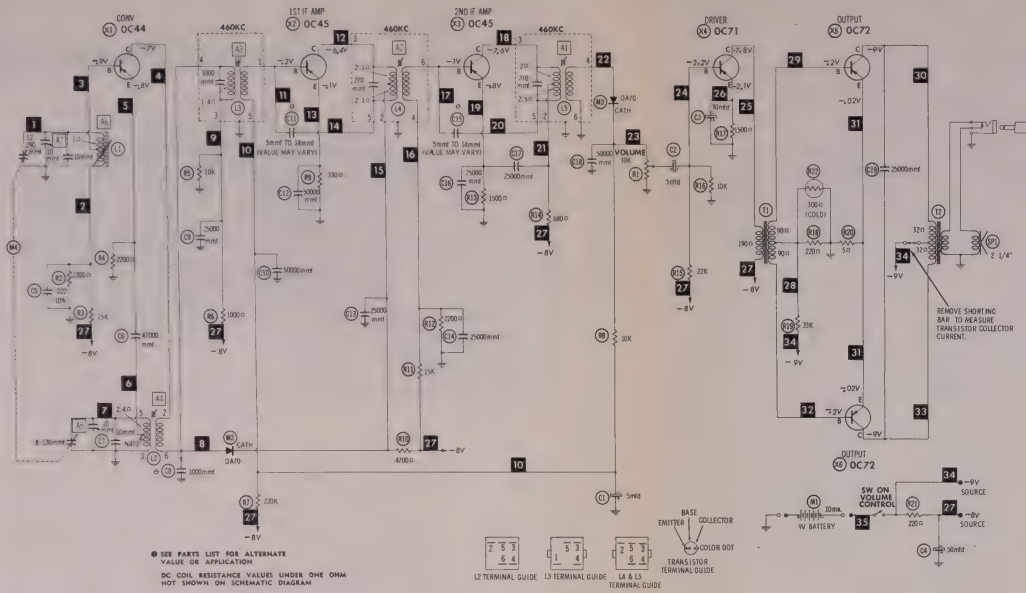
PRINTED BOARD



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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COLUMBIA MODELS 610G, 610R

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	OC44	Converter			2N486	2N412	PNP
X2	OC45	1st IF Amplifier			2N483	2N410	PNP
X3	OC45	2nd IF Amplifier			2N483	2N410	PNP
X4	OC71	Driver		2N406	2N362	2N406	PNP
X5	OC72	Output		2N408	2N632	2N408	PNP
X6	OC72	Output		2N408	2N632	2N408	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	5	25		XPP-25005	NLW6-25	TT25X5	ML5-25	TE-1202	
C2	5	25		XPP-25005	NLW6-25	TT25X5	ML5-25	TE-1202	
C3	30	3		PWE3030	NLW30-6	TT6X30	ML30-6	TE-1092	
C4	50	12		XPP-12050	NLW50-15	TT15X50	ML50-15	TE-1133	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.022 125V 10%		V84C2822-10%					2WF-S22
C6	47000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C7	10 N470					*		
C8	1000	Note 1	SI 1000	D6-102	H-05D1	CCD-102	B-210	5HK-D10
C9	25000				H-05S25		TA-125	TG-S25
C10	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C11		Note 2						
C12	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C13	25000				H-05S25		TA-125	TG-S25
C14	25000				H-05S25		TA-125	TG-S25
C15		Note 2						
C16	25000				H-05S25		TA-125	TG-S25
C17	25000				H-05S25		TA-125	TG-S25
C18	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C19	25000				H-05S25		TA-125	TG-S25

Note 1. Not used in some versions.
Note 2. Values vary, 5-14mmf. Replace with original value.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	10K	1/4	9K647					Volume & Switch

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	2200Ω	
R3	15K	
R4	2200Ω	
R5	10K	
R6	1000Ω	
R7	220K	
R8	10K	

ITEM No.	RATING	REMARKS
R9	330Ω	
R10	4700Ω	
R11	15K	
R12	2200Ω	
R13	1500Ω	
R14	680Ω	
R15	22K	

ITEM No.	RATING	REMARKS
R16	10K	
R17	1500Ω	
R18	220Ω	
R19	33K	
R20	5Ω	
R21	220Ω	
R22	300Ω Cold	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		COLUMBIA PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	20K374				
L2	Osc. Coil	20K376				
L3	1st IF Trans.	20K377				
L4	2nd IF Trans.	20K378				
L5	3rd IF Trans.					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	COLUMBIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.1	1	20K379					

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	2200Ω CT	4-6Ω	3K257						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	COLUMBIA PART No.	QUAM PART No.	
SP1	2 1/4"	PM	4-6Ω	1K163	22A06Z5.5	
SP2	3"x 5"	PM	3-4Ω			

BATTERIES

ITEM No.	VOLTAGE	COLUMBIA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			2U6		216		M-1604	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		COLUMBIA PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	OA70	20K375	1N60	1N60	1N60	Overload, AGC (Pigtail)
M3	OA70	20K375	1N60	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	COLUMBIA PART No.	NOTES
M4	Tuning Cap.	14K115	2 Gang

CABINETS & CABINET PARTS

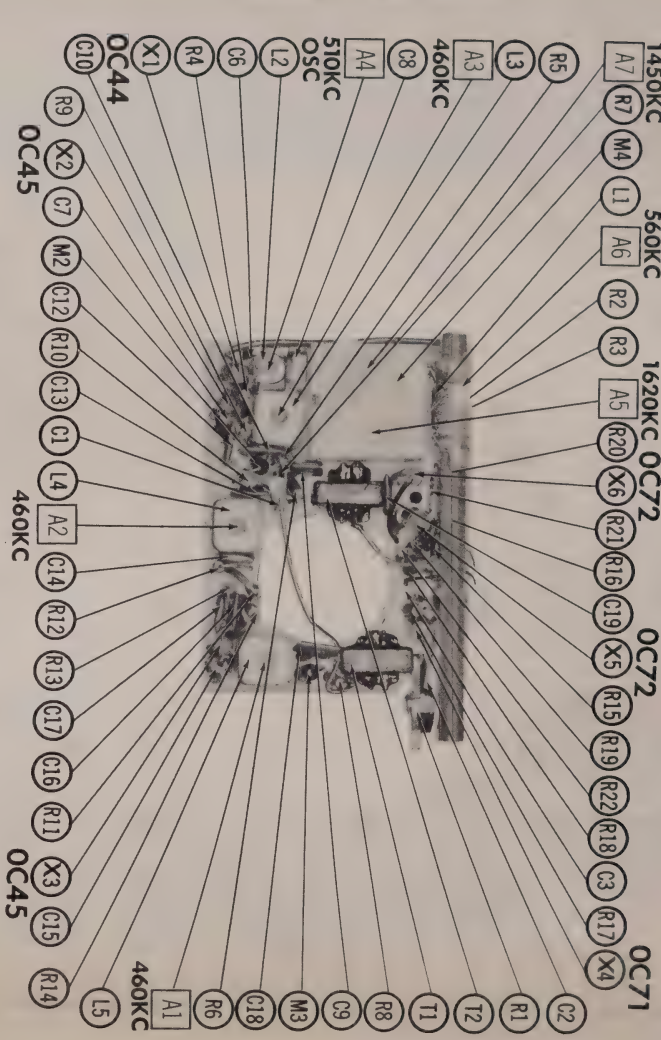
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Pointer	19K716	Dial
Knob	8K528	Tuning
Cabinet	17K893	Grey
Cabinet	17K894	Red

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



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CORONADO MODEL RA50-9900A

CORONADO MODEL
RA50-9900A

CORONADO MODEL
RA50-9900A

TRADE NAME	Coronado Model RA50-9900A
SUPPLIER	Gamble-Skogmo, Inc., 15 N. Eighth Street, Minneapolis 3, Minn.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC RATING 5 MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST 525 — 1670KC	15 MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3... GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537
A4, A5.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .05mfd to base of converter transistor. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	Loop	1670KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	1400KC Signal.	"	A5	"
4.	"	525KC	Tuning gang fully closed.	"	A6	"
5.	"	600KC	600KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 2, 3, 4 and 5.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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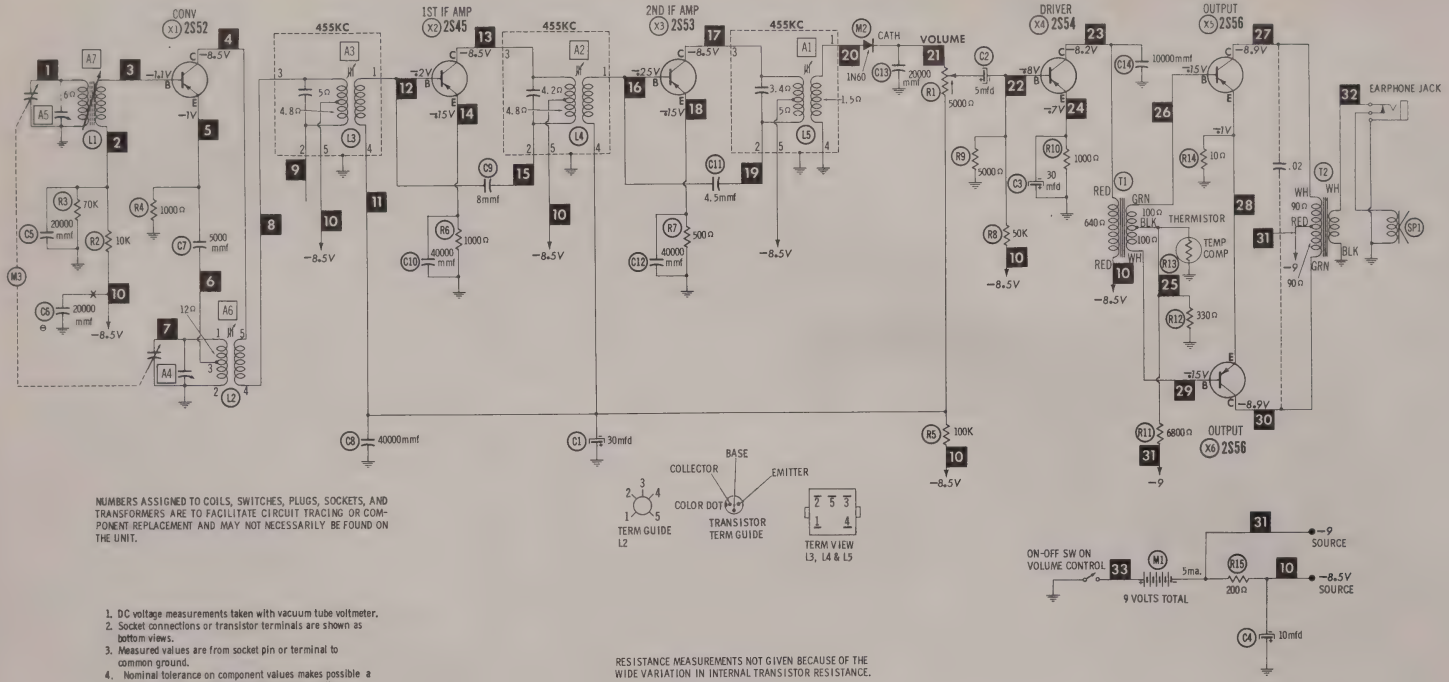
KF126

SET 504 FOLDER 10



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (⊖CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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CORONADO MODEL RA50-9900A

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2S52	Converter				2N411	PNP
X2	2S45	1st IF Amplifier		2N410	2N483	2N410	PNP
X3	2S53	2nd IF Amplifier		2N410	2N483	2N410	PNP
X4	2S54	Driver		2N406	2N406	2N410	PNP
X5	2S56	Output		2N408	2N632	2N408	PNP } Matched
X6	2S56	Output		2N408	2N632	2N408	PNP } Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	CORONADO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	30	3	J9711	PTT3030	NLW25-3	TT3X25	ML25-3	TE-1055	
C2	5	3	J9712	XPP-3005	NLW5-6	TT6X5	ML5-6	TE-1052.2	
C3	30	3	J9711	PTT3030	NLW25-3	TT3X25	ML25-3	TE-1055	
C4	10	10	J974	XPP-10010	NLW10-10	TT12X10	ML10-15	TE-1114	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	20000	Note 1	C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C6	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C7	5000		C80V502AM	DDM-502	H-05D5	CCD-502	TA-250	TG-D50
C8	40000							
C9	8		NPO-SI 8.2		C10V8C			10TCC-V82
C10	40000							
C11	4.5		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C12	40000							
C13	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C14	10000		C80V103AM	DDM-103	H-05S10		TA-110	TG-S10

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	V-502S	B16-214				Volume & Switch

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	10K	
R3	70K	
R4	1000Ω	
R5	100K	
R6	1000Ω	

ITEM No.	RATING	REMARKS
R7	500Ω	
R8	50K	
R9	5000Ω	
R10	1000Ω	
R11	6800Ω	

ITEM No.	RATING	REMARKS
R12	330Ω	
R13	Temp. Comp.	#M8601
R14	10Ω	
R15	200Ω	

Coronado Part Number

PRINTED BOARD

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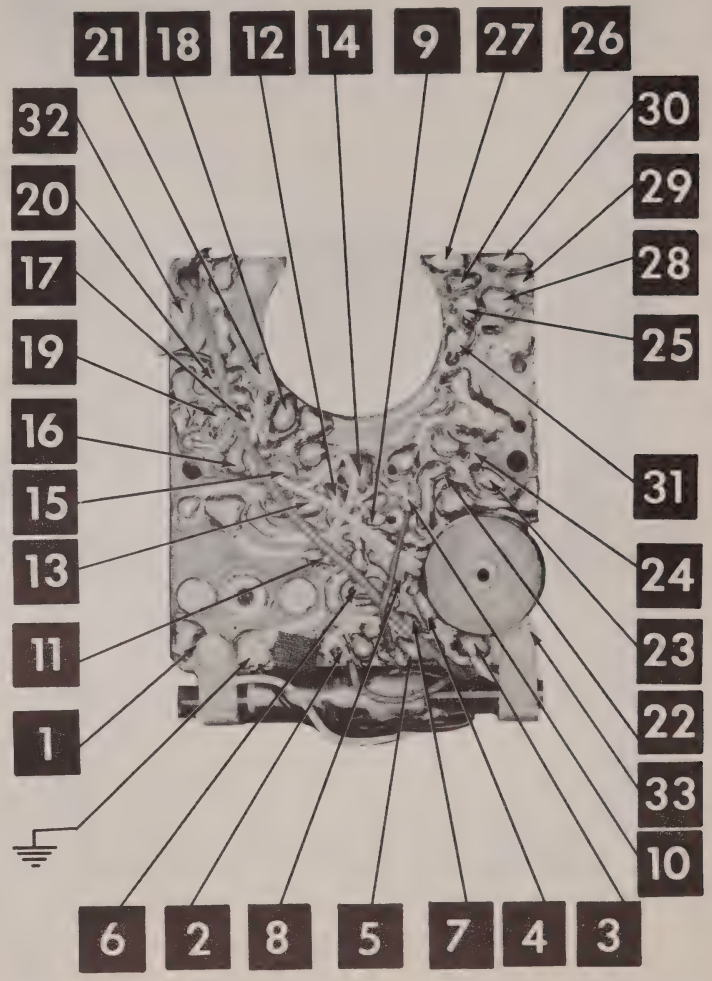
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		CORONADO PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	LA-510				
L2	Osc. Coil	LB-507				
L3	1st IF Trans.	XC-64				
L4	2nd IF Trans.	XC-65				
L5	3rd IF Trans.	XC-66				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CORONADO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2, 4	1	IT502A			TR-40		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CORONADO PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	800Ω CT	6-8Ω	OT-507						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CORONADO PART No.	QUAM PART No.	
SP1	1 3/4"	PM	6-8Ω	4, 5P-1A		

BATTERIES

ITEM No.	VOLTAGE	CORONADO PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	17-330		2U6		216		M-1604	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		CORONADO PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60		1N60	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M3	Tuning Cap.	C-132	2 Gang

CABINETS & CABINET PARTS

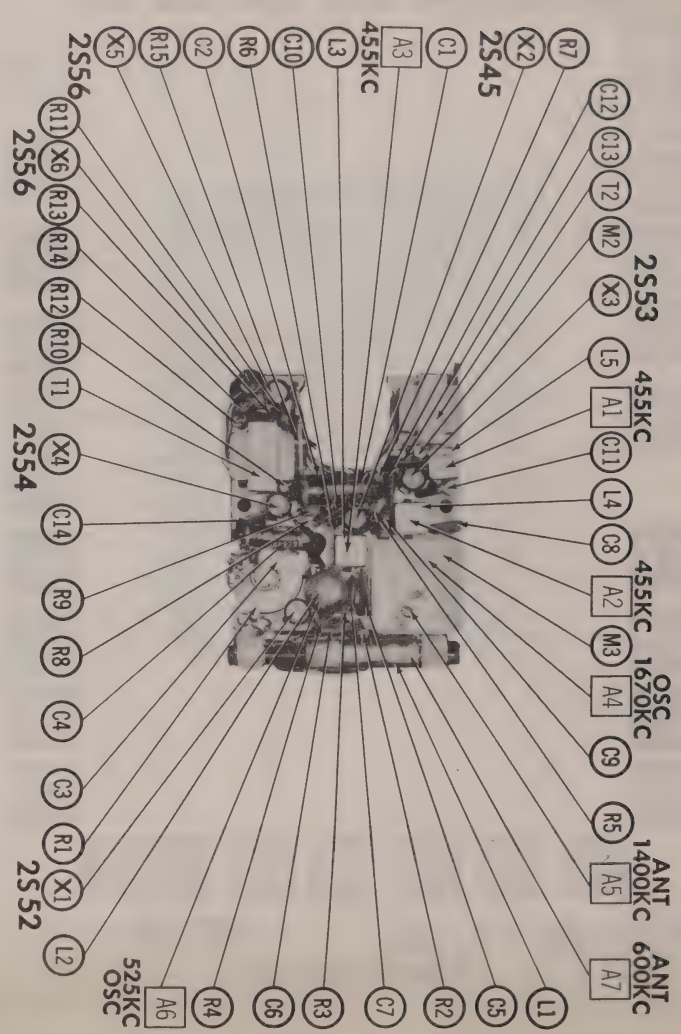
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	1235-03	Tuning
Knob	1235-04	Volume
Cabinet	1235-01	Includes Rear Cover

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



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**CROWN MODEL
TR-555**

CROWN MODEL
TR-555

CROWN MODEL
TR-555

TRADE NAME	Crown Model TR-555		
IMPORTER	Shriro, Inc., 276 Fourth Ave., New York 10, N. Y.		
TYPE SET	Battery Operated Transistorized Portable AM Receiver		
POWER SUPPLY	9 Volts DC	RATING	10MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	535 – 1650KC		15MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A4.....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A3, A5.....GENERAL CEMENT #5000, 5003, 5066, 8271, 8272, 8276, 8277, 8290, 8609, 8722, 9150, 9298
WALSCO #2515, 2516, 2518, 2519, 2525, 2541

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A3	"
3.	"	600KC	600KC Signal	"	A4	"
4.	"	1400KC	1400KC Signal	"	A5	Adjust for maximum output while rocking tuning gang.

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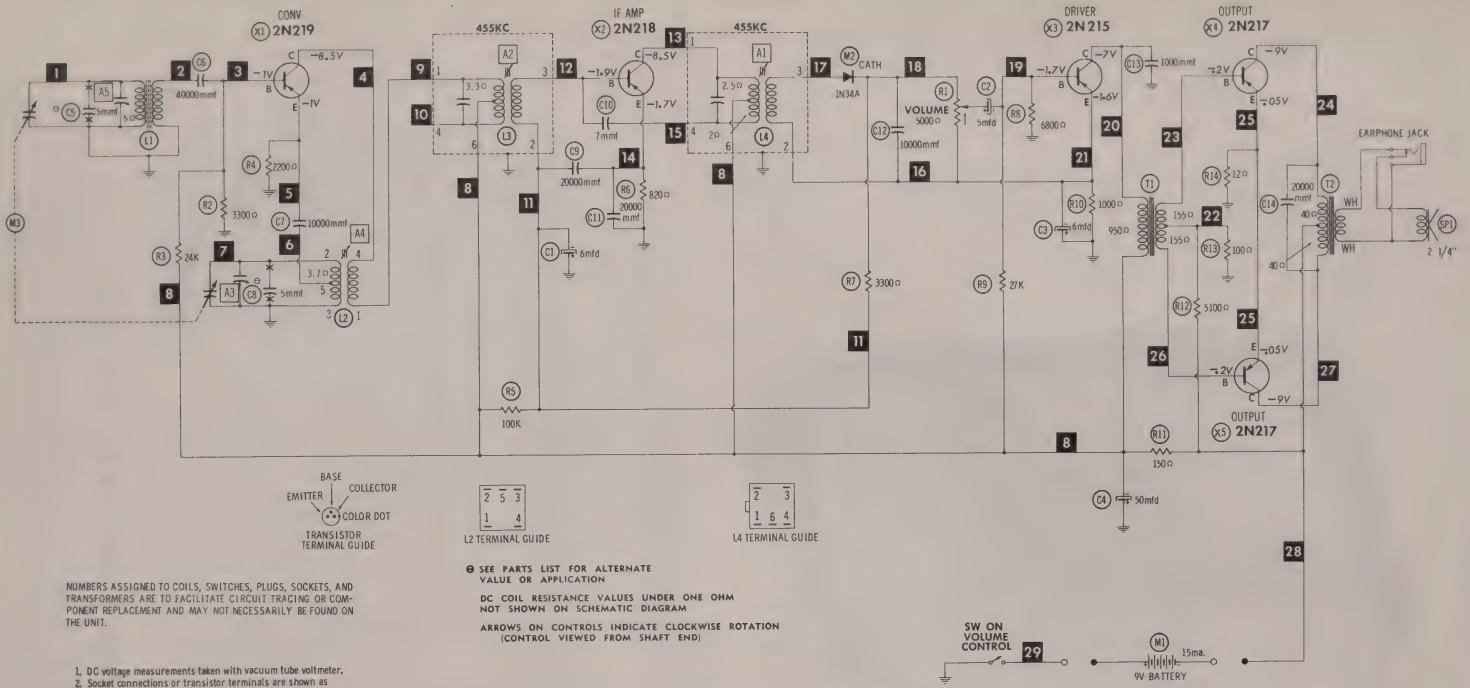
KF053

SET 504 FOLDER 11



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

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CROWN MODEL TR-555

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N219	Converter		2N219	2N485	2N219	PNP
X2	2N218	IF Amplifier		2N218	2N482	2N218	PNP
X3	2N215	Driver		2N407	2N362	2N104	PNP
X4	2N217	Output		2N407	2N632	2N217	PNP \ Matched
X5	2N217	Output		2N407	2N632	2N217	PNP / Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	CROWN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	6	6		XPP-6006	NLW6-15	TT10X6	ML6-6	TE-1085	
C2	5	3		XPP-3005	NLW5-15	TT6X5	M5-6	TE-1052.2	
C3	6	6		XPP-6006	NLW6-15	TT10X6	ML6-6	TE-1085	
C4	50	10		XPP-10050	NLW50-10	TT10X50	ML50-15	TE-1119	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	5	Note 1	NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50	
C6	40000								
C7	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10	
C8	5	Note 1	NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50	
C9	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20	
C10	7		NPO-DI 6.8	DTZ-6R8	C10V7C	CCTO-6R8	CNO-568	10TCC-V68	
C11	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20	
C12	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10	
C13	1000		C80V102AM	DM-102	H-05D1	CCD-102	B-210	5HK-D10	
C14	20000		C80V203AM	H-05S2		B-120	TG-S20		

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CROWN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	SNV-16ZL					Volume & Switch

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	3300Ω	
R3	24K	
R4	2200Ω	
R5	100K	
R6	820Ω	

ITEM No.	RATING	REMARKS
R7	3300Ω	
R8	6800Ω	
R9	27K	
R10	1000Ω	
R11	150Ω	

ITEM No.	RATING	REMARKS
R12	5100Ω	
R13	100Ω	
R14	12Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		CROWN PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	TR-555				
L2	Osc. Coil	X0-127				
L3	Input IF Trans.	6641				
L4	Output IF Trans.	6612				

PRINTED BOARD

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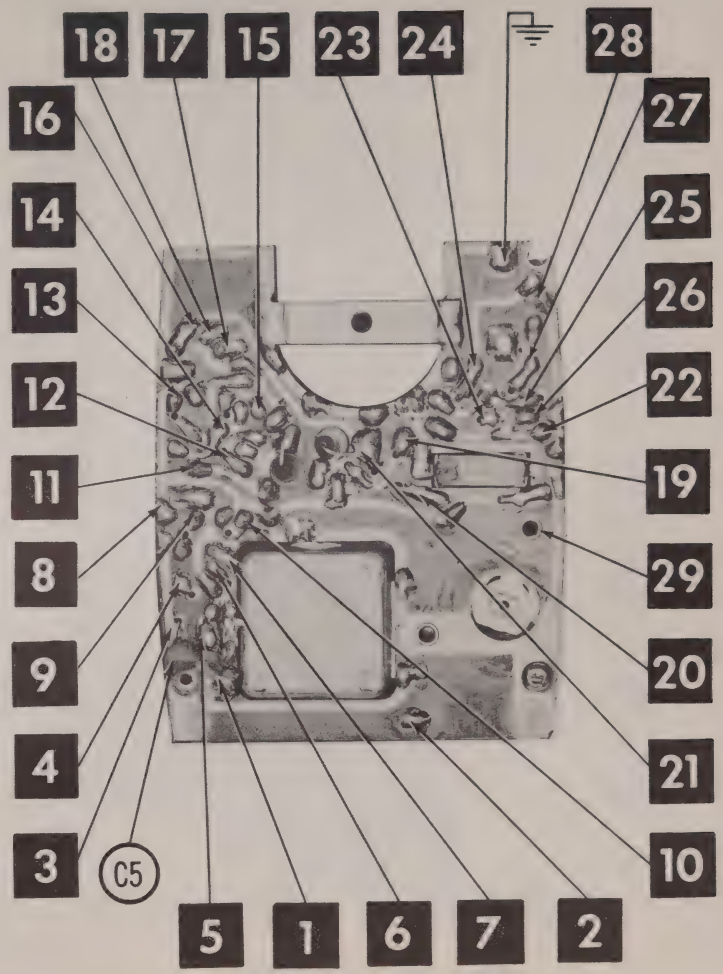


PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CROWN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	TRT-30					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CROWN PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	800Ω CT	8-10Ω	TRT-31						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CROWN PART No.	QUAM PART No.	
SP1	2 1/4"	PM	8-10Ω	PL-230	22A06Z10	

BATTERIES

ITEM No.	VOLTAGE	CROWN PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			2U6		216		M-1604	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		CROWN PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N34A		1N34A	1N34A	1N34A	Detector (Pigtail)

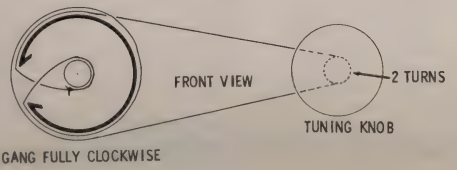
MISCELLANEOUS

ITEM No.	PART NAME	CROWN PART No.	NOTES
M3	Tuning Cap.	PV-P4	2 Gang

WIRING DATA

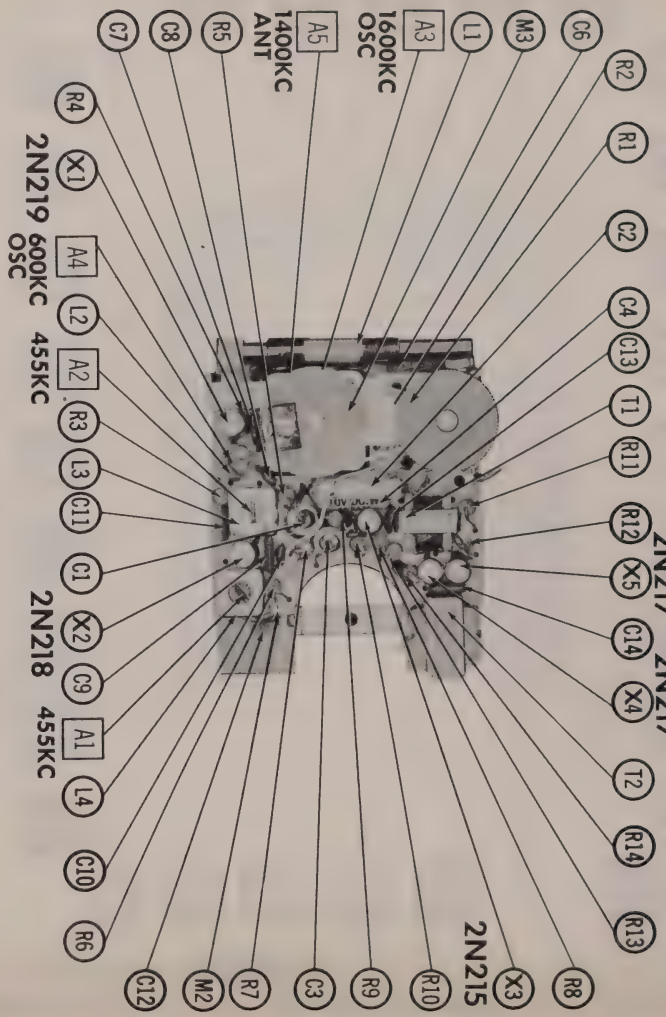
General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

TUNING DRIVE CORD STRINGING



TUNING GANG FULLY CLOCKWISE

CHASSIS—TOP VIEW



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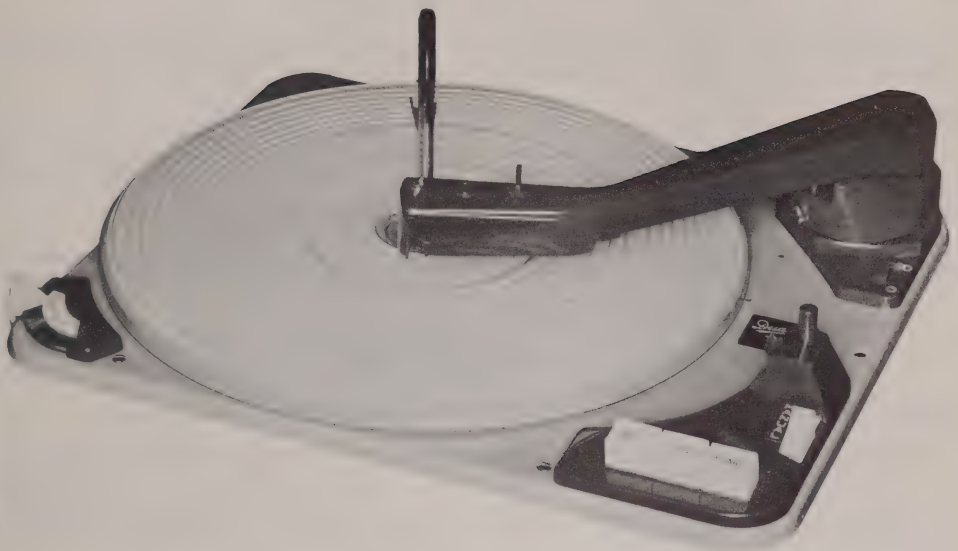
DUAL MODEL
1006

DUAL MODEL
1006



DUAL MODEL
1006

GENERAL INFORMATION

The Dual Model 1006 is a four-speed, Stereo or Monaural record changer designed to play a stack of 7, 10, or 12-inch records in automatic sequence. Using the short spindle supplied, the record changer can be used as a manual, single play record player.

The tripping method used is the velocity type. In this method, a trip slide lever causes a trip pawl to engage a projection on the turntable hub and start the mechanism into cycle. If a record being played causes the pickup arm to move inward at a constant rate without acceleration, a point will be reached at which a constant diameter trip is effected.

Connect these changers to an outlet supplying 117 volts, 60 cycles AC.

Supplied by:

United Audio Products
12 W. 18th Street
New York 11, New York

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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CQ431

FUNCTION OF CONTROLS

Start

The Start button has two functions — it turns the power on to the unit, and — it rejects a record.

Stop

When the Stop button is depressed, the changer will reject and the tone arm will set down on its rest post and turn the power off to the record changer.

Repet

When the Repet button is depressed, the record changer will play the record on the turntable and will reject when the tone arm reaches the end of the record and then it will replay the same record.

Depressing the Repet and Start buttons, the changer will reject and play the same record over.

Depressing the Repet and Stop buttons, the changer will reject and the tone arm will return to its rest post and turn the power off to the record changer but will not drop the next record onto the turntable.

Speed Control

Depressing this control and moving it to the left or right selects the speed for the records to be played.

Manual

Push the slide switch all the way forward. This disengages the automatic mechanism of the changer so the changer can be used as a manual turntable.

Stereo-Mono Switch

Push the slide switch toward the single circle for mono and toward the double circles for stereo.

OPERATING INSTRUCTIONS

Automatic Changer

1. Insert automatic spindle (3) into the hole in the turntable and turn clockwise to lock it in position.
2. Place up to ten records of any size but of the same speed on the spindle.
3. Depress the Start button to start the changer and play the first record of the stack.
4. Depress the Repet button to repeat a record on the turntable at the end of its play.
5. To repeat a record during play, depress the Repet button, then the Start button.
6. To reject a record, depress the Start button.
7. To stop the changer without changing records, depress the Repet and then the Stop button.
8. To stop the changer and change records, depress the Stop button.

Automatic Single Play

1. Insert the short spindle (2) into the hole in the turntable.
2. Place a record on the turntable.
3. Depress the start button. Power will be applied to the changer and the tone arm will move over and set down on the record. At the end of the record, the tone arm will return to its rest post and power to the changer will be turned off.

Manual Single Play

1. Insert short spindle (2) into hole in turntable.
2. Push manual slide switch all the way forward.
3. Place a record on the turntable.
4. Lift tone arm and place on record.
5. At the end of a record, the tone arm will return to its rest post and the changer will shut off automatically.

Speed Control

The speed control is marked 16, - 33, - 45 and 78. It is to be set for the type records being played. When set to the blue dot, the idler wheel (190) is disengaged to prevent flat spots from developing on it.

CHANGE CYCLE

Observe the change cycle by manually rotating the turntable by hand. The following action can then be readily understood. In this explanation of the change cycle, the mechanism is assumed to have stopped automatically with the pickup arm resting on the rest post.

To start the unit into automatic cycling, depress the Start button. The movement of this control and its associated levers actuates the On-Off switch and start lever (139) which causes pawl (142) to contact the projection on cam gear (149) and push it enough to engage it with the gear on turntable (7). As cam gear (149) rotates, tone arm actuating lever (156) and spindle actuating lever (220) are actuated simultaneously. Tone arm actuating lever (156) rides on the outer cam of cam gear (149) as cam gear rotates. As cam gear (149) rotates, tone arm actuating lever (156) pushes lift rod (123) up and causes clutch plate (120) to contact clutch disc (111) and lifts lift pin (15) to raise the tone

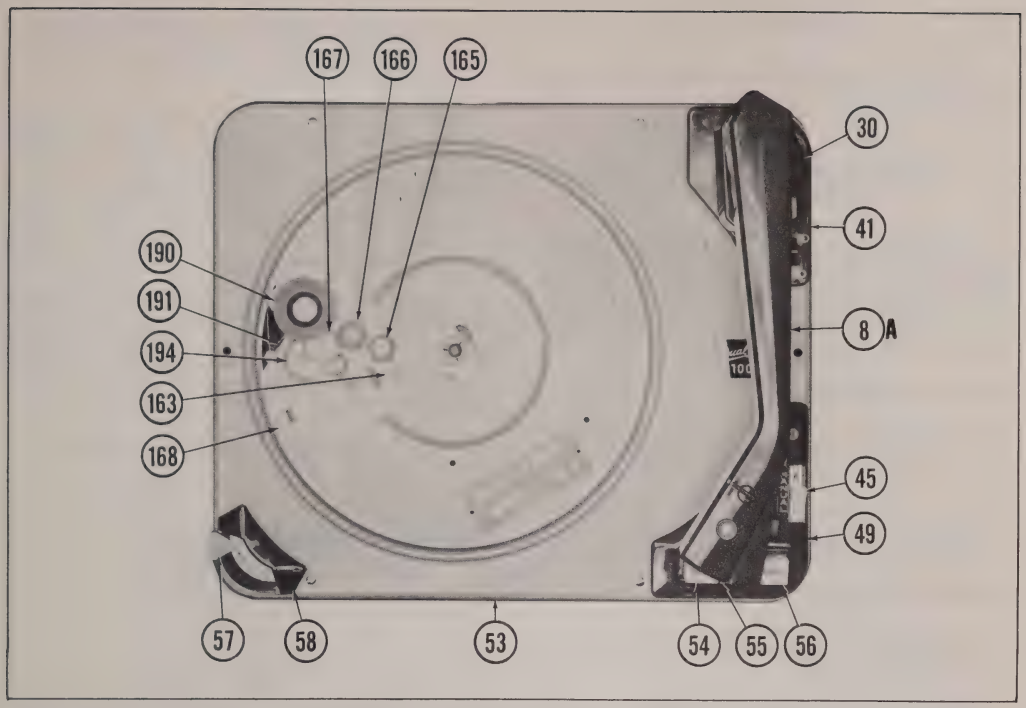


FIG. 1 TOP VIEW OF MECHANISM WITH TURNTABLE REMOVED

arm and it moves the tone arm in and out as cam lever (113) rides in the groove of cam gear (149).

As cam gear (149) rotates, spindle actuating lever (220) rides on the inner cam of cam gear (149) and actuates feeler lever (219) which actuates the fingers of automatic spindle (3) and leaves a record drop onto the turntable (7).

Simultaneously lift pin (15) actuates slide lever (21) which in turn actuates lift lever (16) which actuates feeler guide levers (26) and (14) which actuates roller feeler guides (9).

As cam gear (149) rotates, pin (151) on cam gear, strikes brake lever (134) and prevents it from engaging cam lever (113) and allows the tone arm to swing in over the record. When the tone arm sets down on the record, roller feeler guides (9) ride on the record until they reach the protected edge of the record and then the tone arm lifts and the roller feeler guides (9) are retracted and the stylus sets down in the lead-in grooves of the record.

When the tone arm enters the lead-out grooves of the record, trip lever (104) strikes friction plate (179) and moves shut-off pawl (177) so it contacts the projection on the turntable hub. When shut-off pawl (177) contacts the projection on turntable hub, it rotates friction plate (179) far enough to engage cam gear actuating lever (147) and rotates cam gear (149) enough to engage the gear on the turntable to cycle the changer.

To stop the changer, depress the Stop button. This actuates start lever (139) which causes pawl (142) to contact the projection on cam gear (149) so it will engage the gear on the turntable hub. Simultaneously, brake lever (134) is pushed far enough so cam lever (113) will be in the upper indentation of brake lever (134) and the clutch will slip so the tone arm will remain over its rest post and set down. As it sets down, cam gear (149) completes its rotation, and shuts the power off.

ADJUSTMENTS

Stylus Pressure

Turn knurled screw (40) clockwise to reduce the stylus pressure and counterclockwise to increase stylus pressure.

Set Down

Turn cam screw (114) clockwise to move the tone arm in farther and counterclockwise to move the tone arm out.

Trip Lever

Turn cam screw (103A) to the right or left until trip lever (104) actuates friction plate (179) properly.

LUBRICATION

Apply a thin coat of nonhardening lubricant on all sliding levers.

MOUNTING AND INSTALLING THE CARTRIDGE

Several types of stereo cartridges are shown in **Fig. 7** mounted with the recommended screws and spacers. If the type cartridge being used is not shown, refer to **Fig. 6** as a guide for selection of proper screws and spacers. The cartridges shown in **Fig. 7** are 70% of actual size.

Removing Old Cartridge

1. Unclamp the tone arm and remove the cartridge holder by turning the slotted lock-tab counterclockwise. The holder will drop into your palm.

   NOTE: The tone arm does not lift up. Do not attempt to force it up beyond the normal scope of its free movement.

Mounting New Cartridge

1. Mount the cartridge to the holder with the proper spacers and screws recommended for the type cartridge to be used.

2. Refer to **Fig. 4**. Use the mounting gauge to check stylus depth (23mm or 29/32"). If the stylus exceeds the limit indicated by the gauge, remove the washer. For arm to function properly, screws must not protrude beyond surface of holder.

3. Insert mounted cartridge assembly into tone arm head, placing it gently all the way up and to the front. Do not attempt to lift arm beyond its normal free movement (see **Fig. 5**) .

4. While holding cartridge with tip of finger, turn lock-tab clockwise (without forcing) to lock cartridge securely in place.

Fig. 9 shows the relative positions of the roller-feed guides and the stylus when indexing and when in play. **Fig. 9A** shows the wheels retracted, and the stylus is exposed for playback. **Fig. 9B** shows the wheels descended, and the stylus will clear the grooves and permit arm to index records.

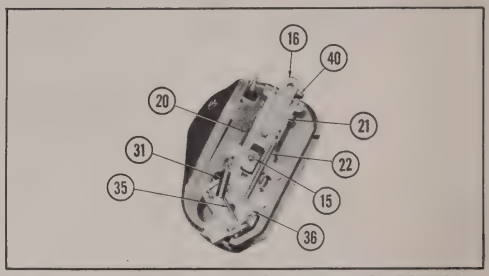


FIG.2 UNDERSIDE OF CARTRIDGE ASSEMBLY

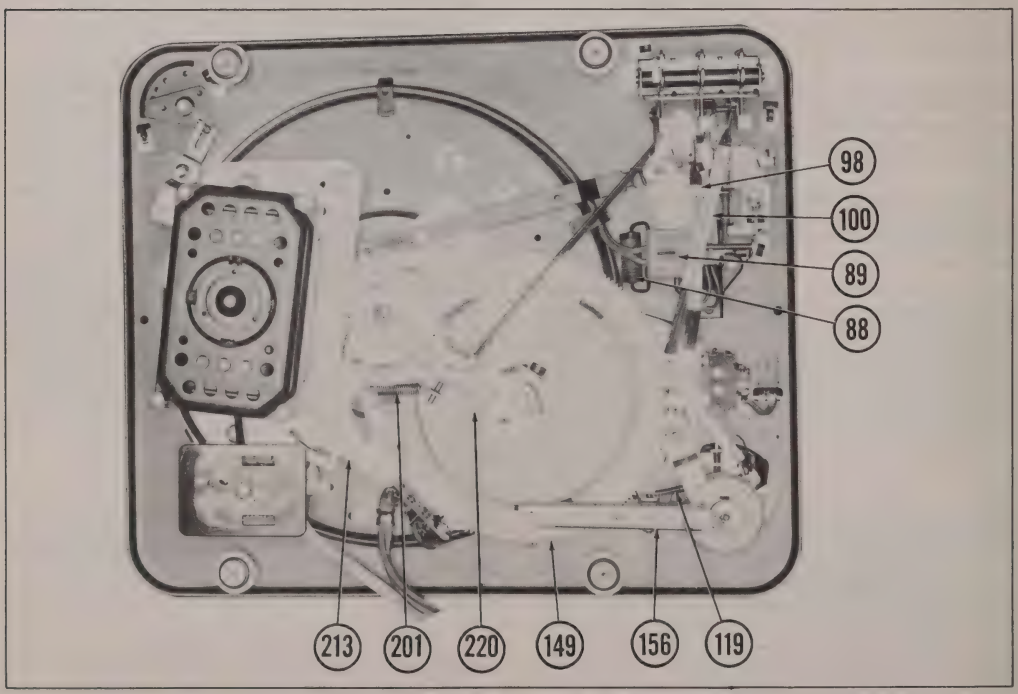


FIG.3 BOTTOM VIEW OF MECHANISM

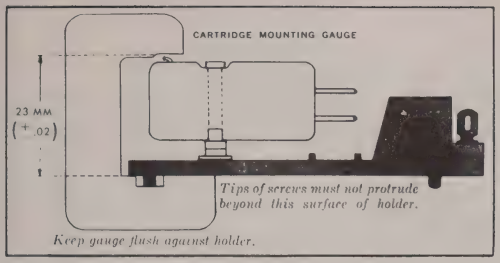

CARTRIDGE MOUNTING GAUGE
23 MM
(+.02)
Tips of screws must not protrude beyond this surface of holder.
Keep gauge flush against holder.

FIG.4 USE OF MOUNTING GAUGE

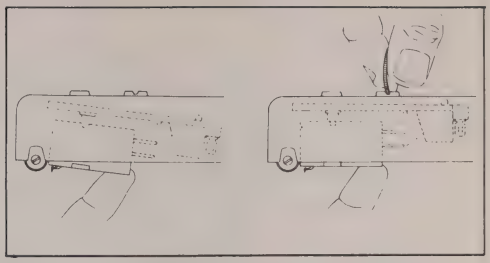
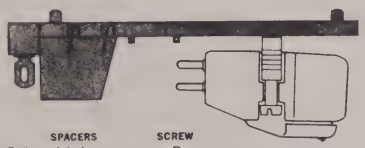


FIG.5 INSERTING MOUNTED CARTRIDGE

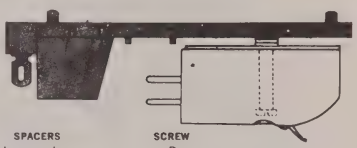
FIG.6 CHART FOR SELECTION OF PROPER SCREWS AND SPACERS

Audio Empire (*Model 88 shown mounted*)



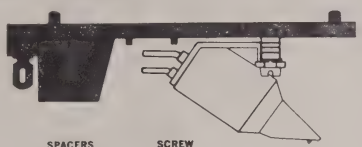
	SPACERS	SCREW
88	5-ring nickel	B
108	5-ring nickel & washer	B

Grado (*Custom shown mounted*)



	SPACERS	SCREW
Custom	two washers	D

Dynaco (*Stereodyne II shown mounted*)

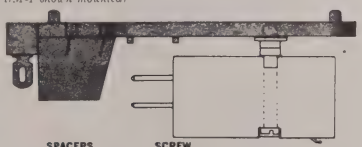


	SPACERS	SCREW
Stereodyne II	3-ring nickel	F

Pickering (*Model 380 shown mounted*)

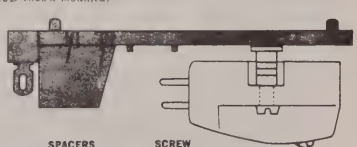
	SPACERS	SCREW
380	3-ring nickel	F
371-7D	0-ring nickel	E

Fairchild (*Model SM-1 shown mounted*)



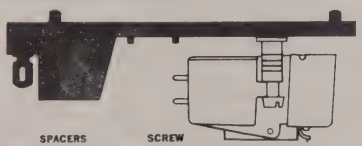
	SPACERS	SCREW
SM-1	1-ring copper & washer	A
232	2-ring copper & washer	B
225-A	4-ring copper & washer	B

Shure (*Model M3D shown mounted*)



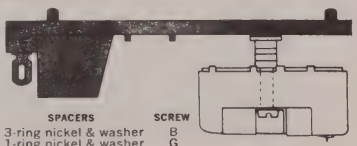
	SPACERS	SCREW
M3D	3-ring copper & washer	D
M7D	3-ring copper & washer	C

General Electric (*Model VR-22 shown mounted*)



	SPACERS	SCREW
VR-22	4-ring copper & washer	C
VR-II	5-ring copper & washer	C

Dual (*Model DMS-900 shown mounted*)



	SPACERS	SCREW
DMS-900	3-ring nickel & washer	B
CDS-420	1-ring nickel & washer	G

CDS-420 requires ivory-colored holder supplied on request with spacers and screws.

NOTE: For turn-around cartridges, remove plastic insert on top of tonearm head.
For turn-over cartridges, cut away the thin wall at the front of the tonearm head.

FIG.7 VARIOUS CARTRIDGES MOUNTED WITH RECOMMENDED SCREWS AND SPACERS

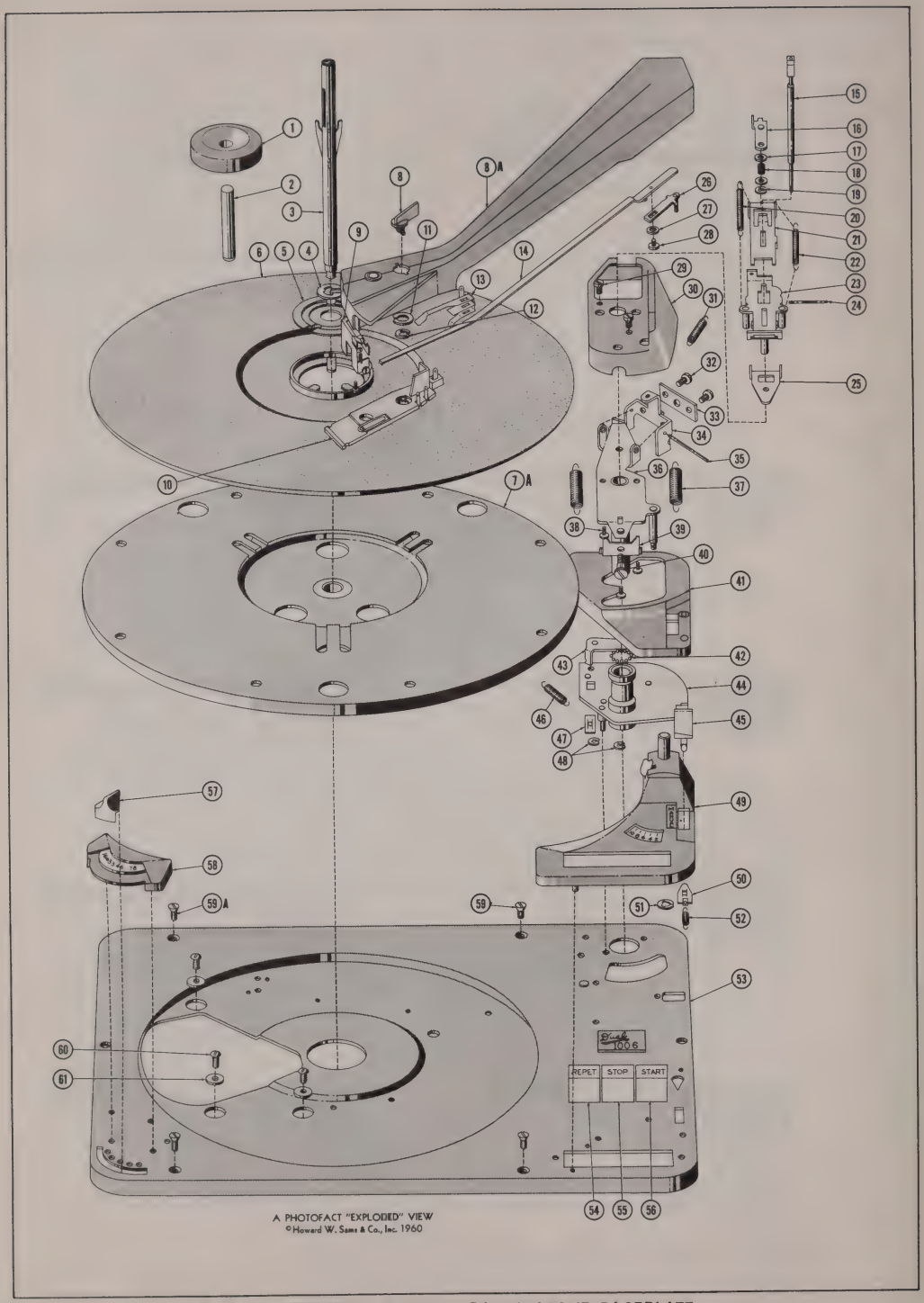


FIG.8A EXPLODED VIEW OF PARTS ABOVE BASEPLATE

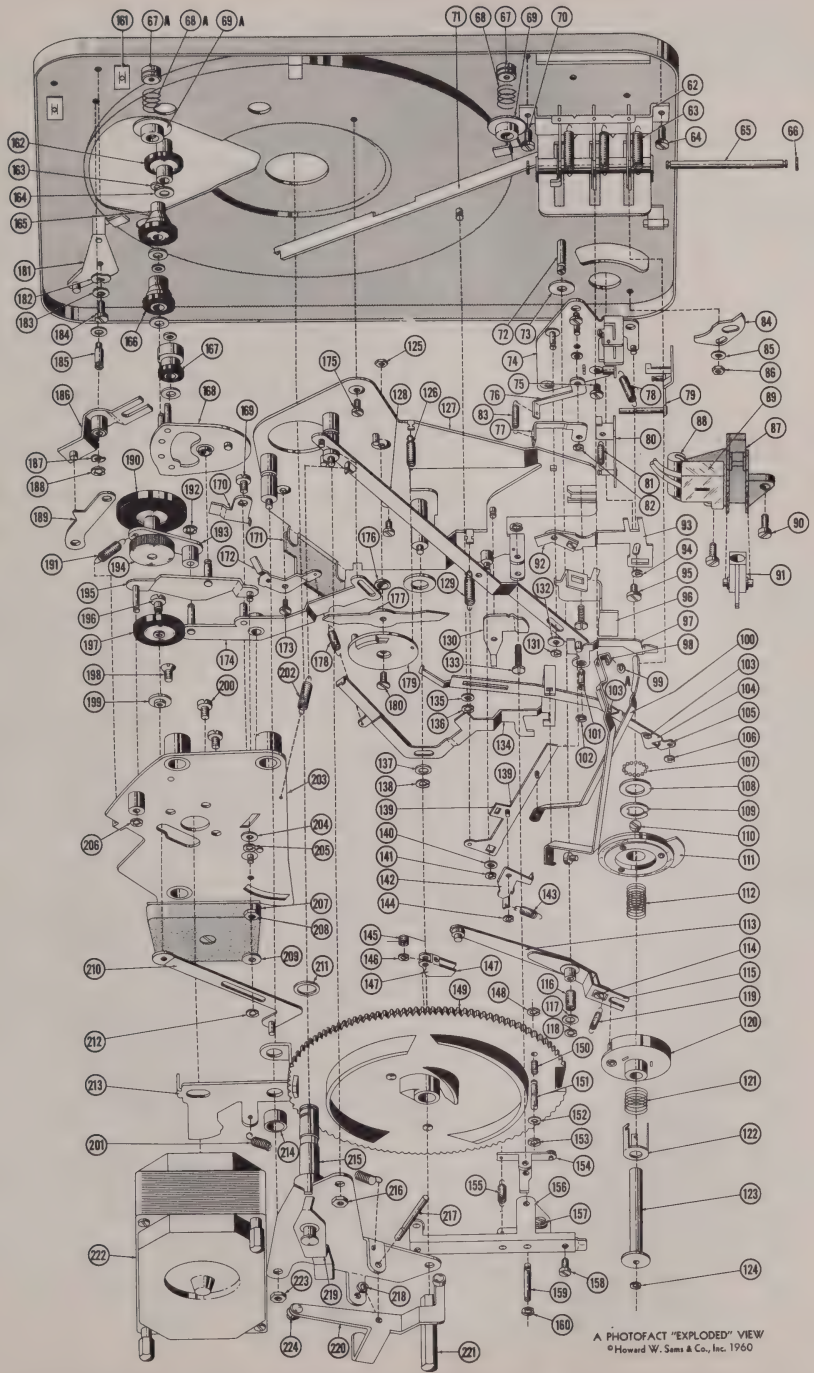
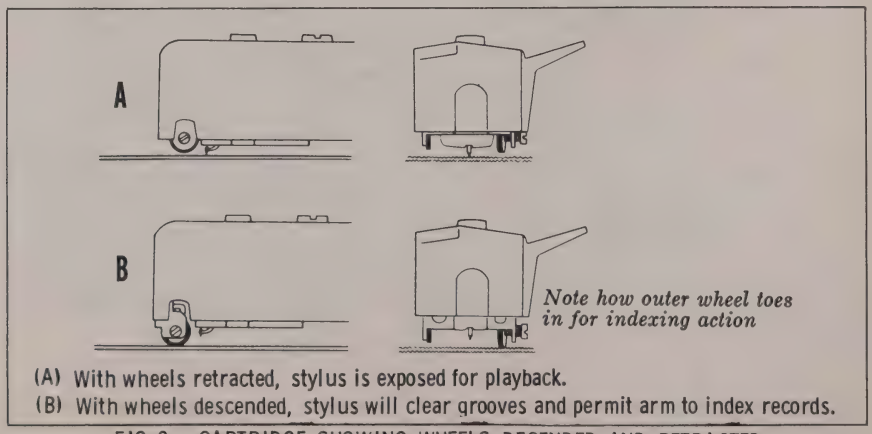


FIG.8B EXPLODED VIEW OF PARTS BELOW BASEPLATE

TROUBLE CHART

Symptom	Cause	Remedy
Will not reject when start or stop button is depressed.	1. Start lever pawl (142) not contacting projection on cam gear (149) properly.	1. Bend pawl (142) so it strikes the projection on cam gear (149) squarely.
	2. Tension spring (143) broken or weak.	2. Replace tension spring (143).
Will not shut off when stop button is depressed.	1. Brake lever (134) binding.	1. Check for burrs on brake lever (134).
	2. Tension spring (202) missing and not holding brake lever (134) in proper position.	2. Replace tension spring (202).
	3. Brake lever (134) bent due to jamming.	3. Remove brake lever (134) and bend so it rides in its guide and will remove some of the tension from cam lever (113).
Does not reject when tone arm enters the lead-out groove of the record.	1. Trip lever (104) bent out of shape.	1. Bend trip lever (104) so it will contact friction plate (179).
	2. Tension spring (178) missing.	2. Replace tension spring (178).
	3. Shut-off pawl (177) not being actuated by projection on turntable hub.	3. Replace projection on turntable hub.
Stylus skips on a record.	1. Stylus pressure insufficient.	1. Adjust knurled screw (40) until the pressure recommended by the stylus manufacturer is obtained.
Will not change records when start button is depressed.	1. Automatic spindle (3) not locked in its housing.	1. Turn automatic spindle (3) clockwise to lock it in its housing.
Tone arm does not set down on lead-in groove of record.	1. Cam lever (113) out of adjustment.	1. Turn cam screw (114) to the right or left until the tone arm sets down on the lead-in groove of the record.
Changer does not start when start button is depressed.	1. Defective switch (91).	1. Replace switch (91).
	2. Defective motor (222).	2. Replace motor (222).



(A) With wheels retracted, stylus is exposed for playback.
(B) With wheels descended, stylus will clear grooves and permit arm to index records.

FIG. 9 CARTRIDGE SHOWING WHEELS DECENDED AND RETRACTED

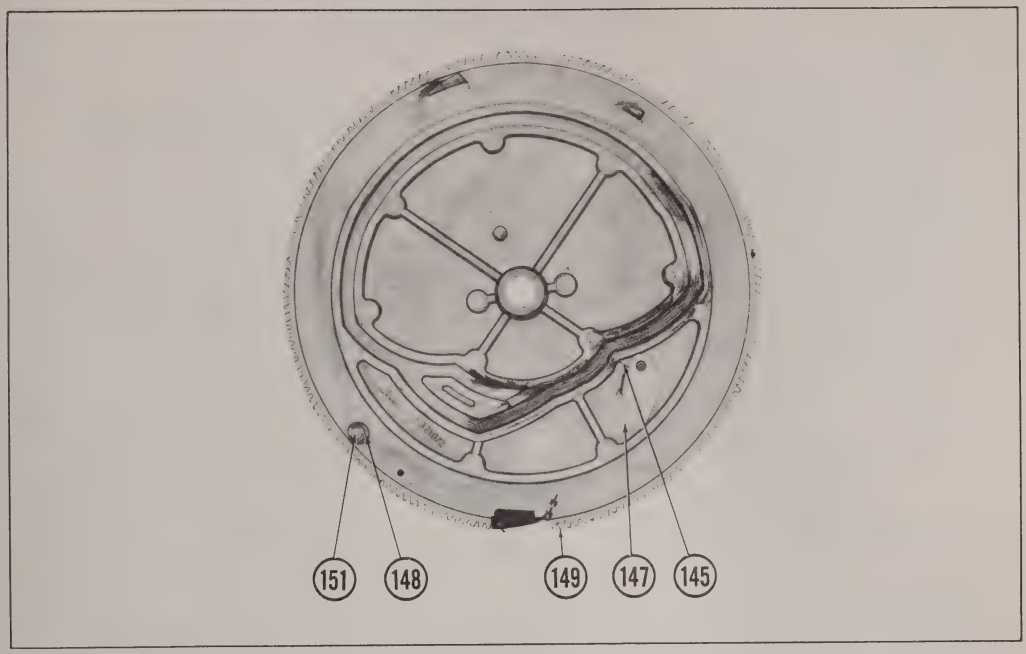


FIG.10 CAM GEAR

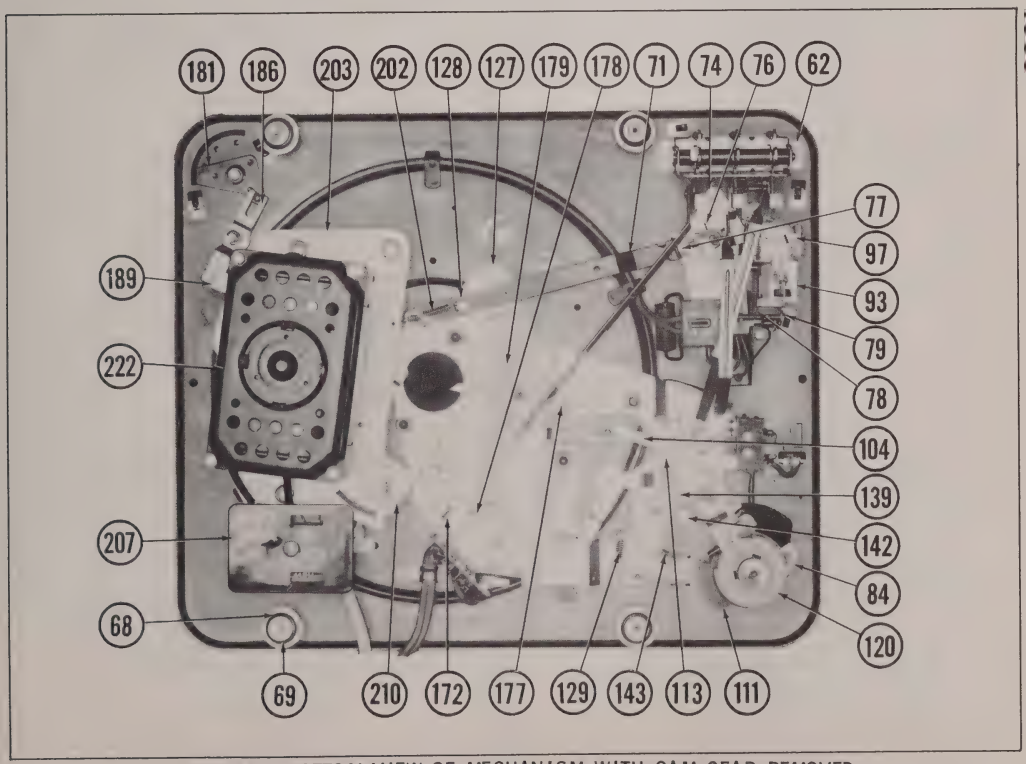


FIG.11 BOTTOM VIEW OF MECHANISM WITH CAM GEAR REMOVED

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	12B-208	Centering Piece
2	12C-294	Short Spindle
3	12C-U208	Changer Spindle
4	4650/9a	"E" Washer
5	12C-290	Cover Disc. for Turntable
6	12C-286	Turntable Mat, Rubber
7	12C-U137	Turntable, Complete (Standard)
7A	12C-U220	Turntable, Complete (Hi-Fi)
8	15E-153	Slotted Straining Bolt
8A	15E-U46	Tone Arm, Complete for Units up to No. 27650
	15E-U54	Tone Arm, Complete for Units up to No. 27651
9		Roller Feeler Guide
10	15E-U79	Cartridge Holder (Standard) Complete
10A	15E-U78	Cartridge Holder (Hi-Fi) Complete
11		Washer
12		"C" Washer
13		Cartridge Contacts
14		Feeler Guide Lever
15	15E-U44	Lift Pin
16		Lift Lever
17		Washer
18	12C-174	Compression Spring, Lift Rod
19		"C" Washer
20	15E-90	Tension Spring, Counterbalance
21		Retract Actuating Slide
22	15E-92	Tension Spring, Counterbalance
23		Retracting Assembly Mounting Plate
24		Pivot Pin
25		Lift Lever Trip
26		Feeler Guide Lever
27		Washer
28		Screw
29		Screw
30	15E-40	Base Housing, Tone Arm
31	15E-18	Tension Spring, Arm Baseplate
32		Screws, Tone Arm Mounting
33		Brass Spacer
34		Hinge, Tone Arm
35		Pin, Hinge
36		Tone Arm Pivot
37		Tension Spring
38		Screw
39		Plate, Stylus Adjusting
40		Screw, Stylus Adjusting
41		Base, Tone Arm Assembly
42		Ball Bearings
43		Tone Arm Inward Travel Stop
44		Bearing Plate, Tone Arm Shaft
45	12C-412	"Manual" Key
46		Tension Spring
47	12A-92	Speed Nut
48		"C" Washer
49	12C-U190	Escutcheon, Complete (Tone Arm Rest)
50	12A-92	Speed Nut
51		"C" Washer
52		Tension Spring
53	12C-U2	Base Plate
53A	12C-15	"Dual" Emblem
54	12C-504	"Repet" Button
55	12C-502	"Stop" Button
56	12C-500	"Start" Button
57	12C-22	Speed Change Knob
58	12C-U26	Speed Change Escutcheon
59	12C-U226	Screw, Spring Suspension Tone Arm Side (Includes items 67, 68, & 69)
59A	12C-U227	Screw, Spring Suspension Motor Side (Includes items 67A, 68A, & 69A)
60		Screws, Motor Mounting Plate
61		Washer, Motor Mounting Plate
62	12B-110	Bracket, Pushbutton (large)
63	12B-135	Spring, Pushbutton tension
64		Screw, Pushbutton Bracket
65	12B-130	Shaft, Control Lever
66		"C" Washer
67		Spring Retainer (Tone Arm Side, Part of item 59)
67A		Spring Retainer (Motor Side, Part of item 59A)
68		Mounting Spring (Tone Arm Side, Part of item 59)
68A		Mounting Spring (Motor Side, Part of item 59A)
69		Mounting Cup (Tone Arm Side, Part of item 59)
69A		Mounting Cup (Motor Side, Part of item 59A)
70		Screw, Pushbutton
71	12C-436	Repeat Rail
72	12C-64	Threaded Stud for Cam Lever
73		Washer
74	12C-U162	Bracket Bearing (Small)
75		Screw, Bearing Bracket
76		Left Idler Lever Lock
77		Right Idler Lever Lock
78	12C-374	Spring, Pusher
79	12C-U180	Switching Bracket
80	12B-U86	"Stop" Lever
81	12C-354	Shut-off Lever Spring
82		"C" Washer
83		Tension Spring
84	11A-195	Lever, Tone Arm Stop
85		Washer Tone Arm Stop
86		Hex Nut Tone Arm Stop
87	12C-44	Bracket, Muting Switch
88	4020/65	Capacitor
89	12B-176	Cover, Plastic (Muting Switch)
90		Screw, Muting Switch Mounting
91	12C-U184	Mercury Switch, Complete
92		Idler Actuating Lever Lock Release
93	12C-U166	Link, Complete
94		"C" Washer
95		Screw, Idler Actuating Lever
96	12C-U176	Push Lever, Complete
97	12C-U178	Idler Actuating Lever
98	12C-U200	"Stop" Lever
99		"C" Washer
100	12C-424	"Start" Lever
101		Stud
102		"C" Washer
103		Screw, (Part of item 105)
103A		Screw, Cam (Part of item 105)
104		Trip Lever (Part of item 105)
105	12C-U42	Draw-Link, Complete
106		"C" Washer
107		Ball Bearings
108		Washer
109		"C" Washer
110		Set Screw

MECHANICAL PARTS LIST (CONT'D)

Ref. No.	Part No.	Description
111	12C-U74	Clutch Disc.
112	12C-164	Compression Spring, Clutch
113	12C-U80	Cam Lever
114		Eccentric Screw, Cam Lever
115		Lever, Part of Cam Lever
116		Compression Spring
117		Washer
118		"C" Washer
119		Tension Spring
120	12C-U86	Clutch Plate Complete
121	12C-170	Compression Spring, Clutch Plate
122	12C-172	Spring Housing
123	12C-U90	Lift Rod
124		"C" Washer
125		Hex Nut
126	12C-54	Tension Spring, Friction Plate
127	12C-U16	Upper Deck Plate
128	12C-U172	Idler Actuating Lever
129	12C-100	Tension Spring, Start Link
130	12C-72	Brake Lever Detent
131		"C" Washer
132		Washer
133		Screw
134	12C-U-32	Brake Lever Complete
135		Washer
136		"C" Washer
137	4,2/10/0, 3	Washer
138		"C" Washer
139	12C-U48	"Start" Lever
140		Washer
141		"C" Washer
142	12C-102	"Start" Lever pawl
143	12C-104	Tension Spring, Start Lever
144		"C" Washer
145		Tension Spring
146		"C" Washer
147		Cam Gear Actuating Lever
148		"C" Washer
149	12C-U94	Cam Gear
150	12C-192	Compression Spring, Cam Gear
151		Pin
152		Washer
153		"C" Washer
154	12C-U116	Brake Lever Complete
155	12C-234	Tension Spring, Brake Lever
156	12C-U112	Tone Arm Actuating Lever, Complete
157		Eccentric Screw, Actuating Lever
158		Eccentric Screw, Actuating Lever
159	12C-236	Shaft, Tone Arm Actuating Lever
160		"C" Washer
161	12A-92	Speed Nut
162	31E-U87	16 rpm Drive Wheel
163	12B-86	"C" Washer
164	11C-138	Washer
165	12B-U46	33 rpm Drive Wheel
166	12B-U44	45 rpm Drive Wheel
167	31E-U84	78 rpm Drive Wheel
168	31E-U80	Switch Plate
169		Screw
170	12A-325	Wire Clamp
171	12C-U23	Pick-up Terminal Board
172	12C-46	Brake Lever Clamp
173		Screw
174	31E-U66	Idler Lift Lever
175		Screw
176		Cup Washer
177	12C-49	Shut-off Pawl
178		Tension Spring
179	12C-50	Friction Plate
180	12C-52	Set Screw, Friction Plate
181	12B-U28	Speed Shift Actuating Lever
182		Spring Washer
183		Washer
184		Screw
185	12B-40	Threaded Stud
186	12B-U24	Speed Shift Lever
187		Spring Washer
188		"C" Washer
189	31G-74	Shift Lever
190	31E-U71	Idler Wheel With Pivot Arm
191	31E-148	Tension Spring
192		"C" Washer
193		Pivot Arm (Part of item 190)
194		Knurled Drive Wheel (Part of item 190)
195	31E-U60	Intermediate Wheel Retract Lever
196	31E-124	Set Screw, Constant Speed Wheel
197	31E-U65	Constant Speed Wheel
198		Screw
199	31E-116	Shoulder Bushing
200		Screw
201	12C-214	Tension Spring
202	12C-342	Tension Spring
203	31E-U52	Motor Mounting Plate
204		Washer
205		"C" Washer
206		"C" Washer
207	31E-U58	Connector Plate
208		Hex Nut
209		Washer
210	31E-U62	Drive Wheel Retracting Lever
211		Washer
212		"C" Washer
213	12C-200	Cam Gear Lock
214	12C-202	Bushing
215		Spindle Housing
216		Hex Nut
217	12A-119	Shaft, Rocker Arm
218		"C" Washer
219	12C-U110	Feeler Lever
220	12C-U106	Lever, Spindle Actuating
221	12C-204	Hex Post
222	31E-U2	Motor
223		Hex Nuts
224		Changer Bolt

PHOTOFACT® Folder with CIRCUITRACE®

LAFAYETTE MODELS KT-310, LA-310

LAFAYETTE MODELS
KT-310, LA-310

MODEL LA-310

LAFAYETTE MODELS
KT-310, LA-310

TRADE NAME	Lafayette Models KT-310, LA-310
SUPPLIER	Lafayette Radio, 165-08 Liberty Ave., Jamaica 33, N. Y.
TYPE SET	AC Operated 7 Tube Stereo Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 110 Watts, 1.1 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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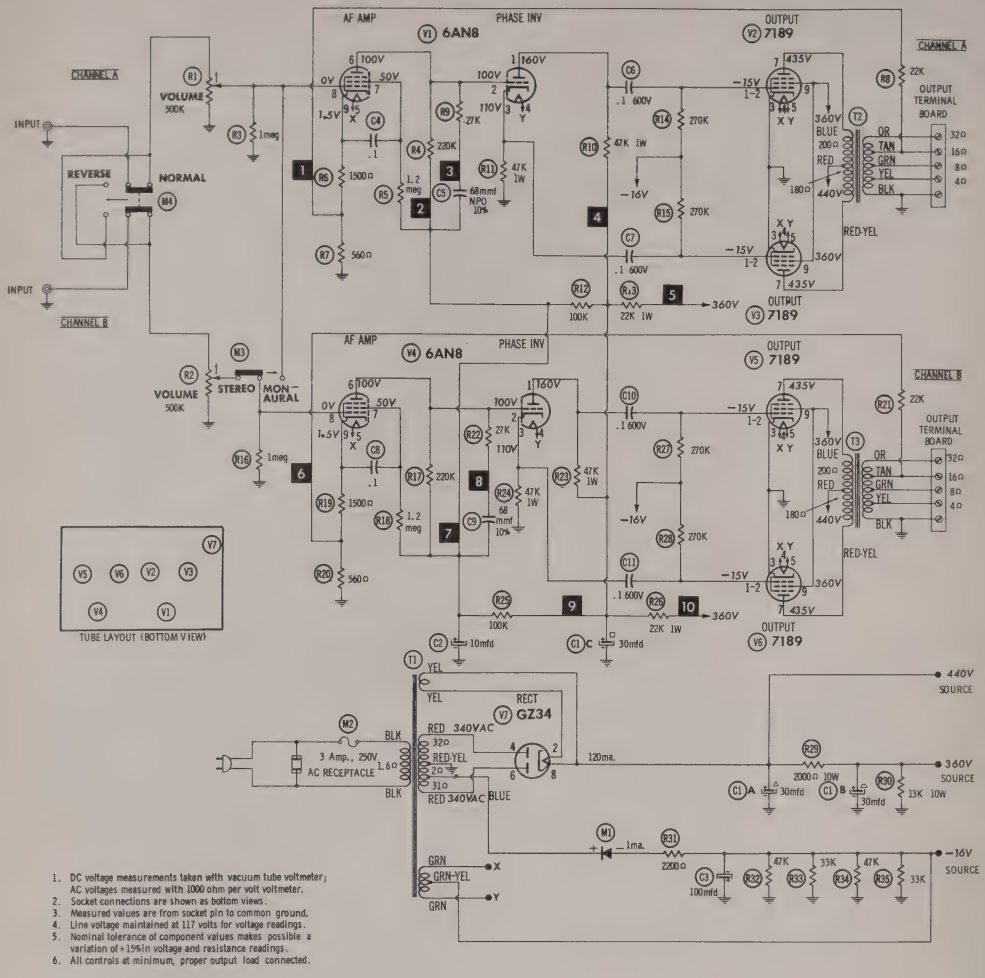
KV041



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AN8	†60K	†280K	47K	16K	16K	†280K	†1.3meg	0Ω	2000Ω
V2	7189	NC	290K	0Ω	16K	16K	NC	†200Ω	NC	†2000Ω
V3	7189	NC	290K	0Ω	16K	16K	NC	†180Ω	NC	†2000Ω
V4	6AN8	†60K	†280K	47K	16K	16K	†280K	†1.3meg	0Ω	2000Ω
V5	7189	NC	290K	0Ω	16K	16K	NC	†200Ω	NC	†2000Ω
V6	7189	NC	290K	0Ω	16K	16K	NC	†180Ω	NC	†2000Ω
V7	GZ34	NC	¶	TP	32Ω	NC	33Ω	TP	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V7. NC NO CONNECTION TP TIE POINT

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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LAFAYETTE MODELS KT-310, LA-310

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •		RAYTHEON •	SYLVANIA •
ITEM No.	USE	TYPE	
V1	Channel A AF Amp. - Channel A Phase Inv.	6AN8	
V2	Channel A Output	7189	
V3	Channel A Output	7189	
V4	Channel B AF Amp. - Channel B Phase Inv.	6AN8	
V5	Channel B Output	7189	
V6	Channel B Output	7189	
V7	Rectifier	GZ34	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA LAFAYETTE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲30	500	12-44	AFH3-52	C0390	FP399, 55	TMT-3862	TVL-3965	
B	▲30	500							
C	■30	500							
C2	10	450	12-45	PRS1720	BR1045	TC72	TD-10-450	TVA-1705	
C3	100	25	12-43	PRS1270	BBR100-25	TC2501	TD-100-25	TVA-1207	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C5	68 NPO 10%		NPO-DI 68	DTZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68
C6	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C7	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C8	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C9	68 NPO 10%		NPO-DI 68	DTZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68
C10	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C11	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA LAFAYETTE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	11-22	B-60	A47-500K-Z	Q13-133	U48	Volume, Channel A
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	500K	½	11-25	B-60	A47-500K-Z	Q13-133	U48	Volume, Channel B
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	1meg	
R4	220K	
R5	1, 2meg	
R6	1500Ω	
R7	560Ω	
R8	22K	
R9	27K	
R10	47K 1W	
R11	47K 1W	
R12	100K	
R13	22K 1W	

ITEM No.	RATING	REMARKS
R14	270K	
R15	270K	
R16	1meg	
R17	220K	
R18	1, 2meg	
R19	1500Ω	
R20	560Ω	
R21	22K	
R22	27K	
R23	47K 1W	
R24	47K 1W	

ITEM No.	RATING	REMARKS
R25	100K	
R26	22K 1W	
R27	270K	
R28	270K	
R29	2000Ω 10W	Pt. #13-39 IRC#PW10-2K
R30	13K 10W	Pt. #13-81 IRC#PW10-13K
R31	2200Ω	
R32	47K	
R33	33K	
R34	47K	
R35	33K	

CHASSIS—BOTTOM VIEW

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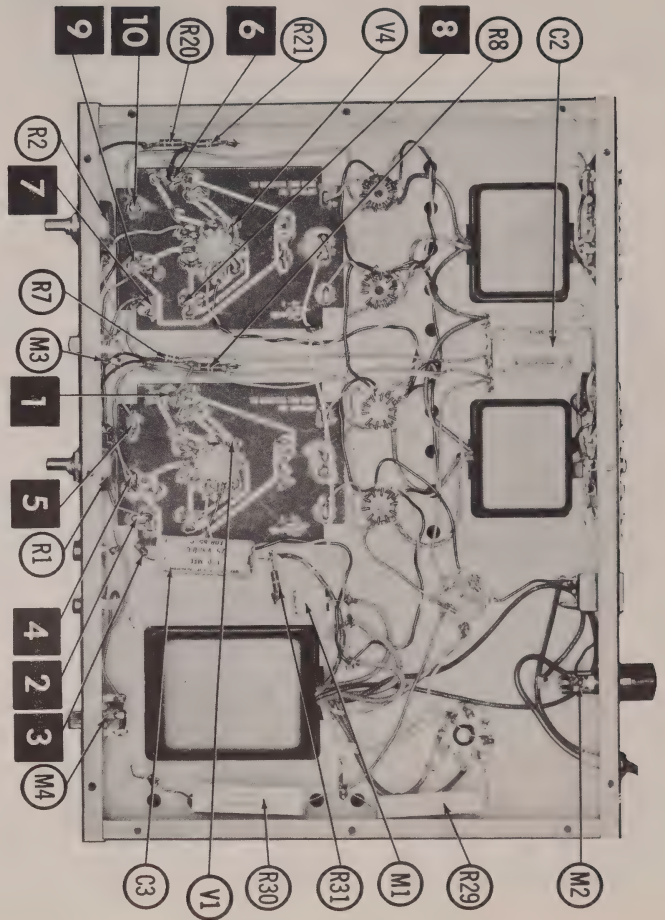
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA: LAFAYETTE PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC. 1								
T1	117V @ 1.1A	680 VCT @ .120A Tap @ 26V @ .001A		15-7						
	SEC. 2	SEC. 3	SEC. 5							
	5V @ 1.9A	6.3VCT @ 2.8A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA: LAFAYETTE PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC.							
T2	7600Ω CT	32Ω Tap @ 16Ω, 8Ω, 4Ω	15-8						
T3	7600Ω CT	32Ω Tap @ 16Ω, 8Ω, 4Ω	15-8						

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: LAFAYETTE PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.001A	17-5 *	1159 *	1N2858	12 *		* Selenium Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: LAFAYETTE PART No. FUSE	LAFAYETTE PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	3AG	3A 250V	20-12	20-14	312003 (3AG 3A 250V)	342001	AGC 3	HKP

MISCELLANEOUS

ITEM No.	PART NAME	LAFAYETTE PART No.	NOTES
M3	Switch	14-16	Mono-Stereo (SPDT Slide Type)
M4	Switch	14-17	Channel-Reverse (DPDT Slide Type)
	Printed Board	16-3	(2 Used)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

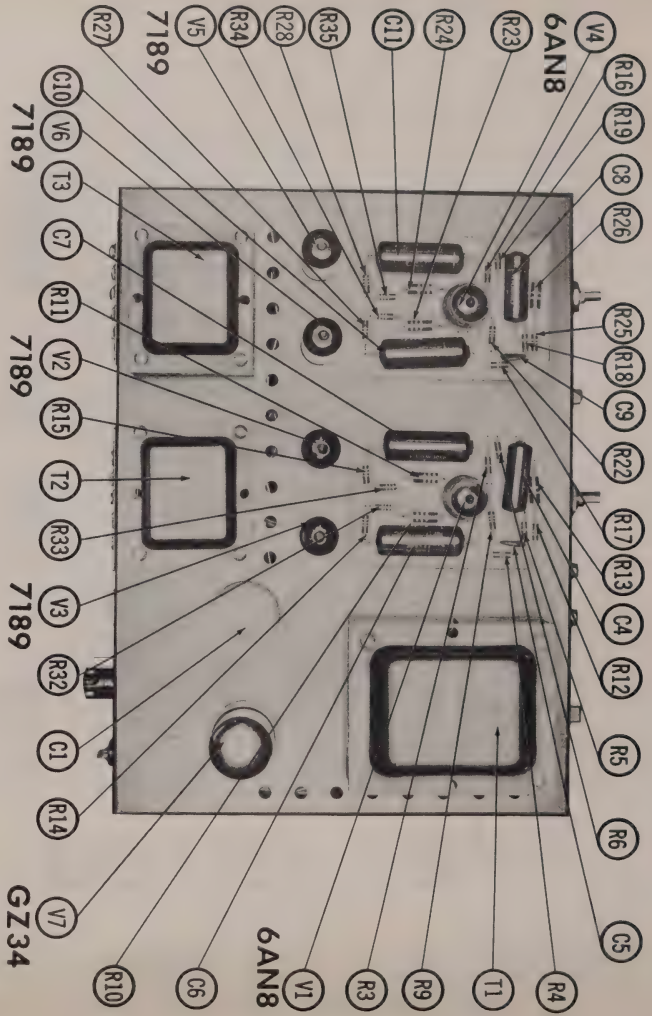
NAME	PART NO.	DESCRIPTION
Knob	18-19	Level
Cage	10-39	

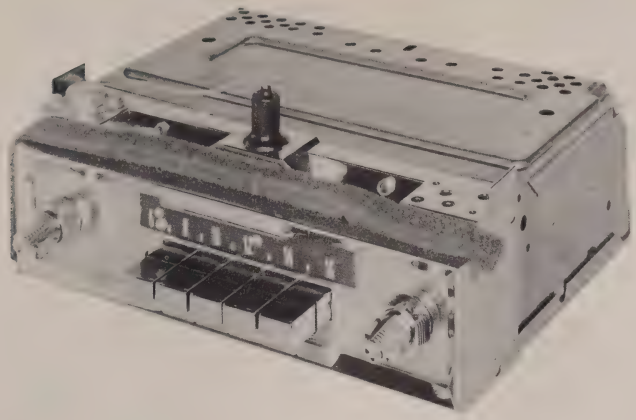
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—TOP VIEW





TRADE NAME	Mopar Model 102 (For PD1, PD2, PD3, PD4 1960 Dodge Automobiles)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated 3 Tube, 2 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery
TUNING RANGE—BROADCAST	540 — 1610KC RATING 1.1 Amp. @ 12.6 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3, A4...GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A8, A9, A10... See Fig. 2.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Thru .1mfd to antenna receptacle.	262.5KC (400∿ Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1610KC	"	"	A5, A6, A7	"
	Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9 and A10) out of coils. Repeat Step 2.					
3.	Thru dummy to antenna receptacle.	1020KC	Tuner carriage 49/64th" from high end stop.	Across voice coil.	A8, A9, A10	Adjust for maximum output. Repeat Step 2.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press pushbutton in firmly.
4. Repeat for remaining pushbuttons.

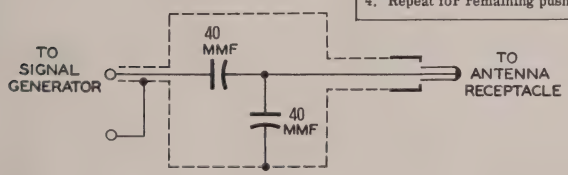


FIG. 1

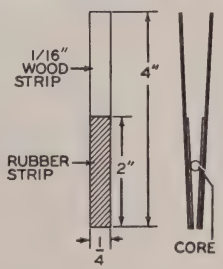


FIG. 2

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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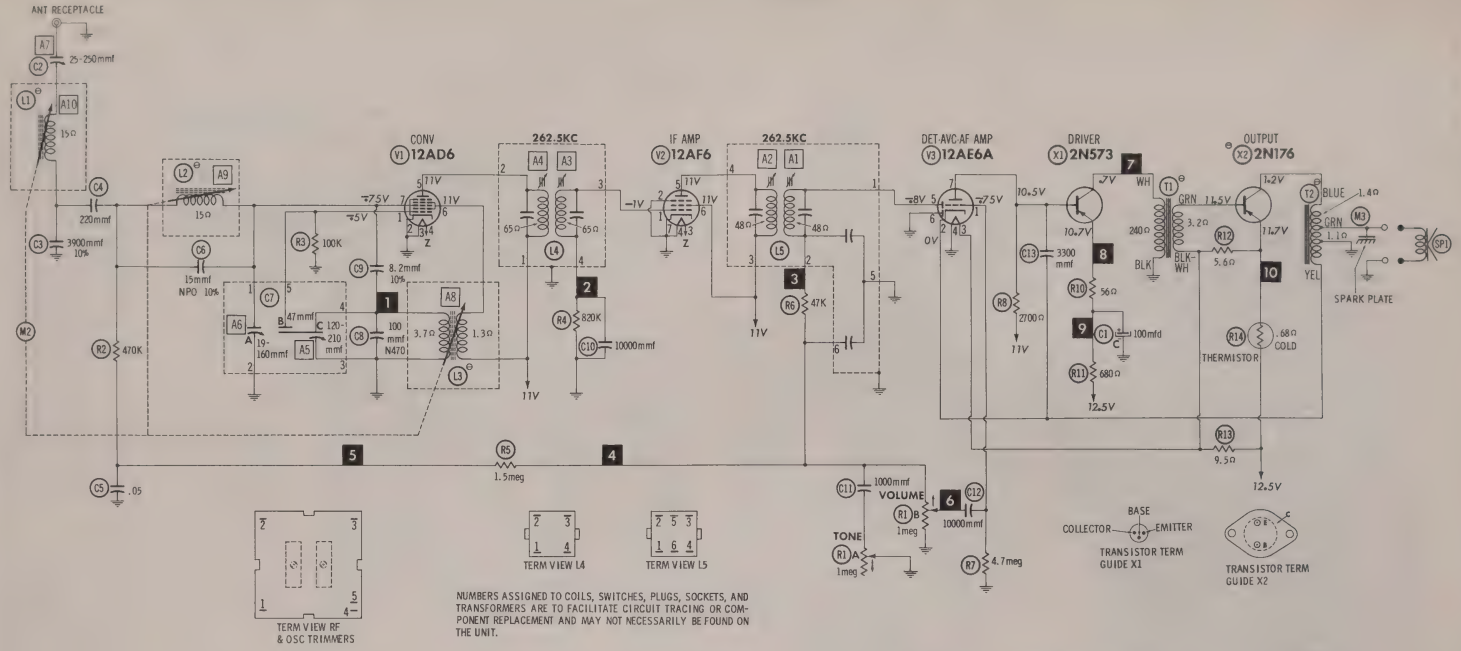
KD102

MOPAR
MODEL 102

MOPAR
MODEL 102

SET 504 FOLDER 14



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AD6	100K	0Ω	0Ω	.8Ω	625Ω	560Ω	3meg
V2	12AF6	820K	0Ω	.8Ω	0Ω	610Ω	560Ω	0Ω
V3	12AE6A	4.7meg	.1Ω	1.1Ω	0Ω	1meg	0Ω	3100Ω

TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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MOPAR MODEL 102

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12AD6	V3	Det.-AVC-AF Amp.	12AE6A
V2	IF Amplifier	12AF6			

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N573	Driver			2N573	2N573	PNP
X2	2N176	Output	2N235A			2N176	PNP Note 1

Note 1. When replacing, apply DC-4 grease (Part #1M490487) or equivalent to both sides of insulator. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■700	16	23C563447	AFH3-00-95.5		WP200.18			
B	▲200	16				TC2501			
C	100	16							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	25-250	#20B563246				464			
C3	3900 - 10%		DI-4000		DPMS6D39	CCD-392	GP239	10TS-D39	
C4	220		DD-221	L10T22	CCD-221	B-322	10TS-T22		
C5	.05 200V		P215N-047	DD-503	BC2S47J	4DP-3-503	ACE-6147	2SE-S47	
C6	15 NPO 10%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15	
C7A	19-160	#20K563688							
B	47		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47	
C	120-210								
C8	100 N470	#21R129849				*			
C9	8.2 10%		NPO-SI 8.2		C10V82C				
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C11	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10	
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10	
C13	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33	
C14	.5 100V		P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P5	

Motorola Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg		18C563115	F1-55		† QJ-1288A	■ UE4144-S	Tone
B	1meg			R2-52				Volume
C	Switch			KR-4				Power Off-On

† "Concentrikit" equivalent: K-15 Kit with base elements & shafts: B11-137, P13-128 (Panel); B13-137, R1-209 (Rear); 76-1 (Switch)

■ "STA-LOC" equivalent: FA16L, RU16A, OS1875A, IS2375, US41.

PRINTED BOARD

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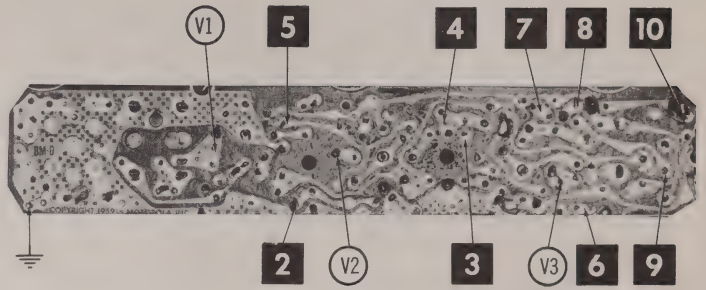
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	470K	
R3	100K	
R4	820K	
R5	1.5meg	
R6	47K	

ITEM No.	RATING	REMARKS
R7	4.7meg	
R8	2700Ω	
R9	560Ω	
R10	56Ω	
R11	680Ω	

ITEM No.	RATING	REMARKS
R12	5.6Ω	#17K739323
R13	9.5Ω	#17K563757
R14	.68Ω Cold	#17K563756 ①

Motorola Part Number.
① Temperature Compensating.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	24K563649 *				
L2	RF Coil	24K563649 *				
L3	Osc. Coil	24B536300 *				
L4	Input IF Trans.	24K563464	BC-344	13-PH1		
L5	Output IF Trans.	24K563457	BC-346	13-PH6		

* Part of coil and mounting plate assembly Part #1V563538.

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	MOTOROLA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L6	1A	.3Ω	.004 HY	25K563567-D ①						

① Alternate Part #25K563567.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	22	1	25C563568-B ①					

① Alternate Part #25K563568.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	25Ω	3-4Ω	25C563569-C ①						

① Alternate Part #25K563569.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	6"x 9"	PM	3-4Ω	50D563102	69A3	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7½A 32V	65R122346	9K563698	30707.5 (SFE 7½A 32V)	155009	SFE 7½	HRH

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Tuner	77D563580	Complete (AT-285) Pushbutton Type
M3	Spark Plate	64K530177	
M4	Spark Plate	64K530177	

CABINETS & CABINET PARTS

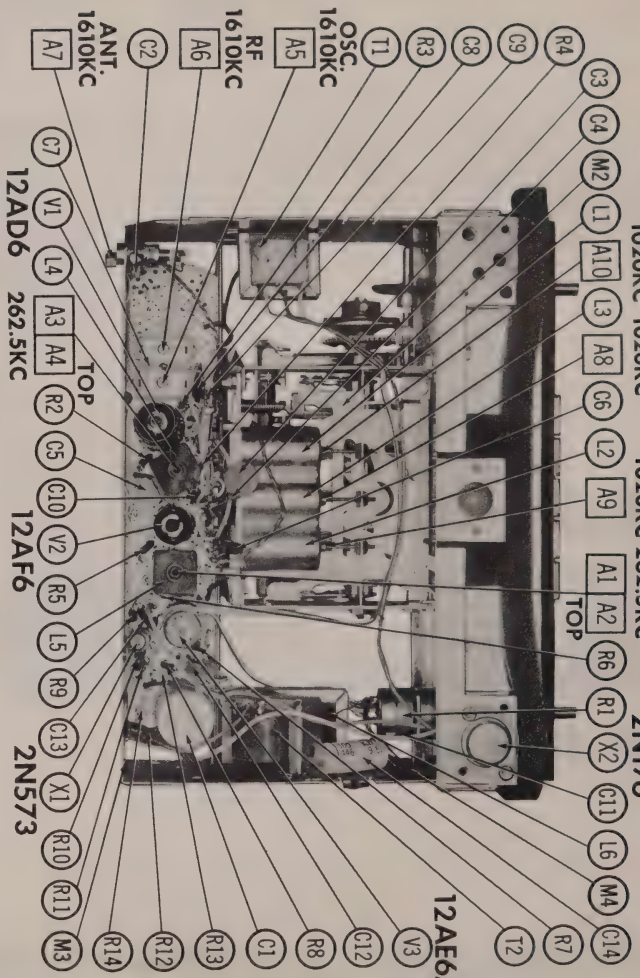
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Scale	34C562637	
Dial Pointer	52A562783	
Knob	36C563058	Tuning, Volume
Knob	36C563057	Tone, Dummy
Pushbutton	1B563640	Five Used

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

CHASSIS—TOP VIEW



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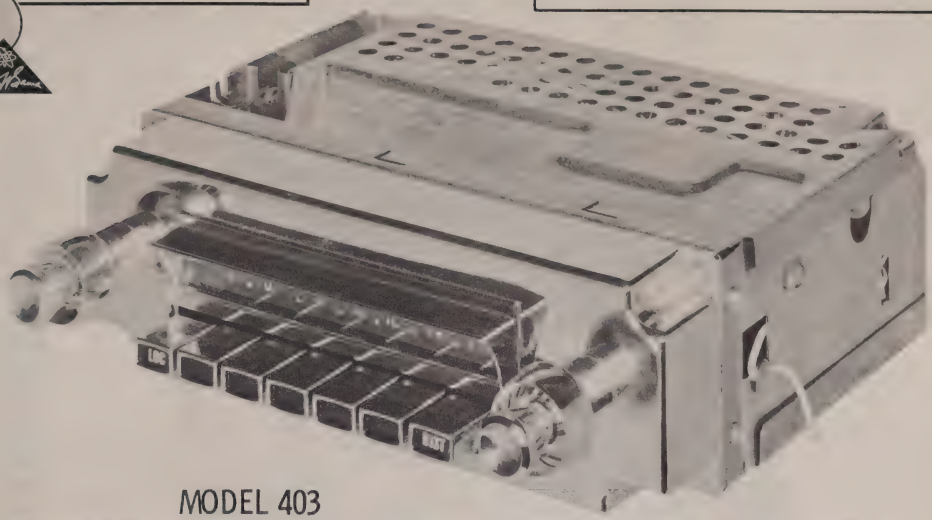
MOPAR MODELS 402, 403



MODEL 403

TRADE NAME	Mopar Models 402 (04BC) For 1960 Chryslers, 403 (04Bl) For 1960 Imperials)
MANUFACTURER	Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Maryland
TYPE SET	Battery Operated 4 Tube, 3 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 1 Amp. @12.6 Volts
TUNING RANGE—BROADCAST	530 — 1605KC (1.5 Amp When Tuning)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3, A4...GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6.....GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A8, A9, A10....GENERAL CEMENT #9050-L, 9150
WALSCO #2521, 2524

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 9 (grid) of Converter. Low side to chassis.	262.5KC (Unmod.)	High end stop.	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1605KC	"	"	A5, A6, A7	"
	Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9 and A10) out of coils. Repeat Step 2.					
3.	Thru dummy to antenna receptacle.	1000KC	Tuner carriage ¼" from high end stop.	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10	Adjust for maximum deflection. Repeat Steps 2 and 3.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press pushbutton in firmly.
4. Repeat for remaining pushbuttons.

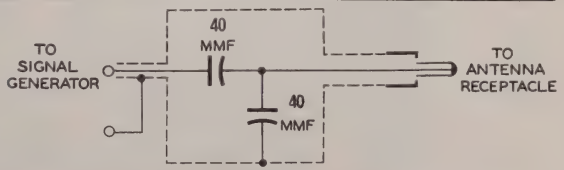


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD103

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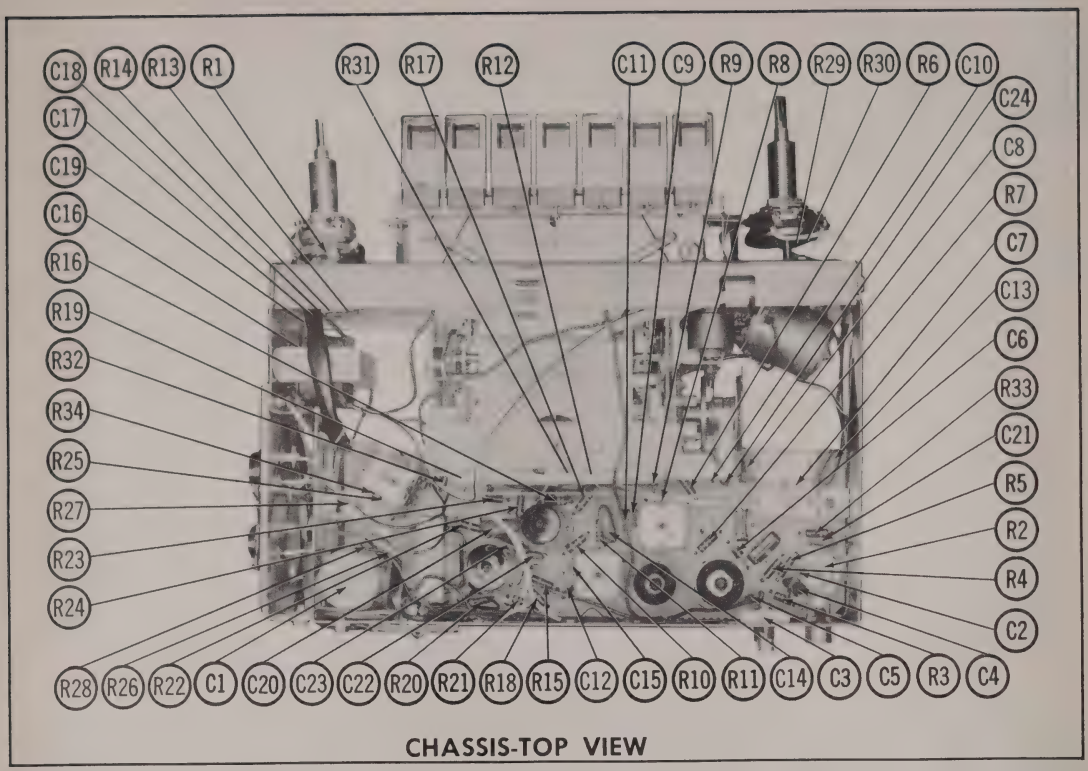
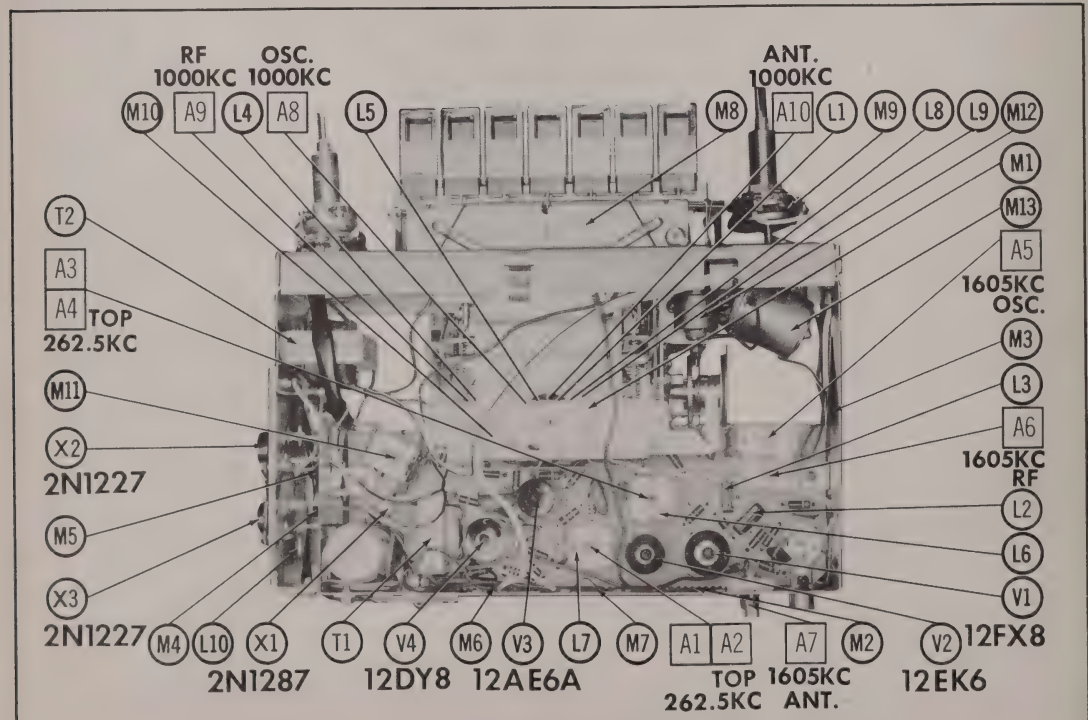
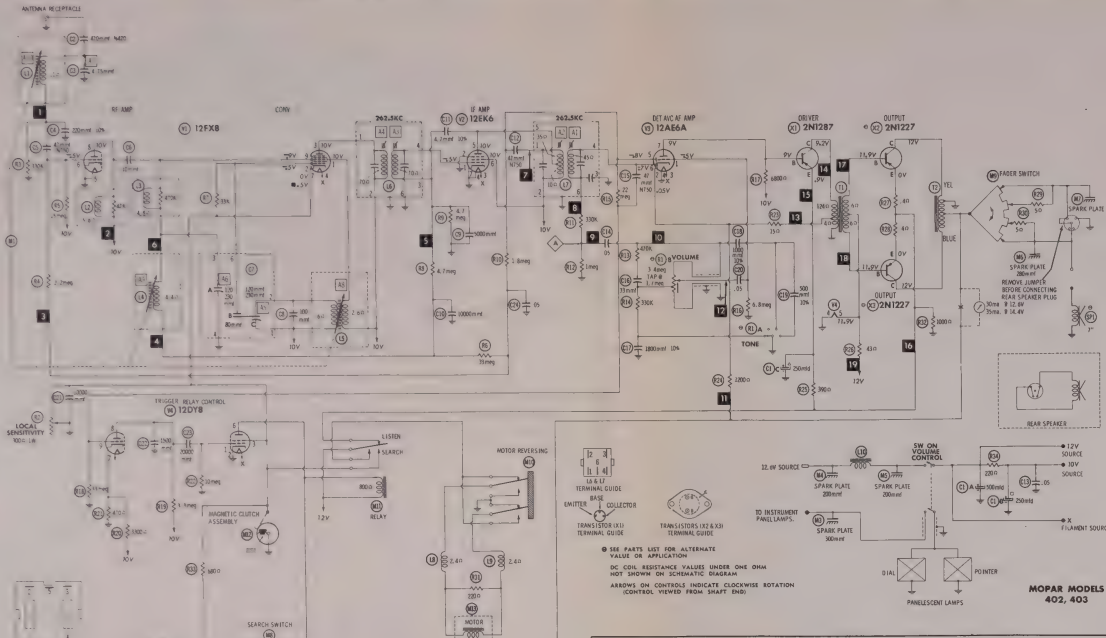
MOPAR MODELS 402, 403
MOPAR MODELS 402, 403
SET 504 FOLDER 15



CHASSIS-TOP VIEW



CHASSIS-TOP VIEW



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter
2. Socket connections shown as bottom views
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings
6. Volume control at maximum, no signal applied for voltage measurements.

TRANSISTOR CIRCUIT RESISTANCE FOR X1, X2 & X3 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

RESISTANCE READINGS

TUBE	SOCKET	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AE6A	10K	10K	235Ω	.8Ω	0Ω	10meg	10Ω	235Ω	8.5meg
V2	12AE6A	8.5meg	0Ω	8Ω	0Ω	250Ω	235Ω	8Ω		
V3	12AE6A	8.5meg	250Ω	8Ω	0Ω	12meg	1.3meg	7000Ω		
V4	12EK6	10meg	0Ω	70Ω	0Ω	9Ω	800Ω	400Ω	3.5meg	23meg

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amp. -Converter	12FX8	V3	Det. -AVC-AF Amp.	12AE6A
V2	IF Amplifier	12EK6	V4	Trigger Relay Control	12DY8

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N1287	Driver			2N362		PNP
X2	2N1227*	Output	2N1227				PNP Matched
X3	2N1227*	Output	2N1227				PNP Pair

* When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	500	16	220353-13	PWH3-00-94		PWP300. 4		PCLS-3026. 6*	
B	■250	16							
C	▲250	16							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	470 N470					*		
C3	4-75	#219083-1				462		
C4	220 10%		1469-00022	TCZ-220	22R5T22	CCD-221	CNO-322	MS-322
C5	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C6	10		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C7A	120-450							
B	80	#219092-11	NPO-DI 82	DTZ-82	C10Q82C	CCTO-820	CNO-482	10TCC-Q82
C	120-230							
C8	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C9	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	4. 7 10%		NPO-SI 4. 7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C12	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C13	. 05 100V		P288N-05	DD-503	CUB2S5	1DP-2-503	GEM-415	2TM-S5
C14	. 05 100V		P288N-05	DD-503	CUB2S5	1DP-2-503	GEM-415	2TM-S5
C15	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C16	33		DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C17	1800 10%		DI-1800	DD-182	5R5D18	CCS-182	GP218	10TS-D18
C18	1000 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C19	500 10%		DI-500	DD-501	5R5T5	CCD-501	GP350	10TS-T50
C20	. 05 100V		P288N-05	DD-503	CUB2S5	1DP-2-503	GEM-415	2TM-S5
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C23	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C24	. 05 100V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	4TM-S5

\# Bendix Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	Switch		2091110-2					Tone Note 1
B	3. 4meg	1/2						Volume, Note 1
	1. 7meg Tap							
C	Switch							Power Off-On
R2	300Ω	1(WW)	2090181-4			110-300		Local Sensitivity

Note 1. Model 402 uses Part #2091110-1.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	330K	
R4	2. 2meg	
R5	15meg	
R6	33meg	
R7	33K	
R8	4. 7meg	
R9	4. 7meg	
R10	1. 8meg	
R11	330K	
R12	1meg	
R13	470K	

ITEM No.	RATING	REMARKS
R14	330K	
R15	22meg	
R16	6. 8meg	
R17	6800Ω	
R18	33meg	
R19	3. 3meg	
R20	3300Ω	
R21	470Ω	
R22	10meg	
R23	15Ω	
R24	1200Ω	

ITEM No.	RATING	REMARKS
R25	390Ω	
R26	0. 43Ω	#2090438-17
R27	0. 4Ω	#2091149-5
R28	0. 4Ω	#2091149-5
R29	5. 0Ω	#2090438-16
R30	5. 0Ω	#2090438-16
R31	220Ω	
R32	1000Ω	
R33	680Ω	
R34	220Ω	

\# Bendix Part Number. Length of resistance wire (R26, 5"; R27 or R28, 4½"; R29 or R30, 27").

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		BENDIX PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	†				
L2	Image Trap	2090088-9①				
L3	RF Choke	2090088-8②				
L4	RF Coil	†				
L5	Osc. Coil	†				
L6	Input IF Trans.	2090876-4				
L7	Output IF Trans.	2090877-5				
L8	RF Choke	2090671-3	BC-564	4608		3.9uh ③
L9	RF Choke	2090671-3	BC-564	4608		3.9uh ③

† Part of tuner coil assembly Part #2090131-17.
① 47K Resistor Moulded Into Form.
② 470K Resistor Moulded Into Form.
③ IRC Part #CL-1.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	BENDIX PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L10	1A	.3Ω	.0015 HY	2090889-3						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.1	1	2090433-5					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA						NOTES
	PRI.	BENDIX PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	30Ω CT Tap@ 3-4Ω	2090266-6						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BENDIX PART No.	QUAM PART No.	
SP1	7"	PM	3-4Ω	2091269-3 *	7A31	* Model 403
	6"x 9"	PM	3-4Ω	2091269-2 ‡	69A3	‡ Model 402

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M1	Tuner Ass'y	2090959-5	Complete (Includes Pushbuttons) 403
	Tuner Ass'y	2090959-3	Complete (Includes Pushbuttons) 402
M2	Spark Plate	220267-16	280mmf
M3	Spark Plate	220267-12	300mmf
M4	Spark Plate	220267-17	200mmf
M5	Spark Plate	220267-17	200mmf
M6	Spark Plate	220267-16	280mmf
M7	Spark Plate	220267-16	280mmf
M8	Switch	2091188-1	Search (Complete Assembly with Pushbutton) Model 403
	Switch	2091187-1	Search (Complete Assembly with Pushbutton) Model 402
M9	Switch	2090886-3	Fader, Front & Rear Seat Speaker, Model 403
	Switch	2090886-2	Fader, Front & Rear Seat Speaker, Model 402

MISCELLANEOUS (cont)

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M10	Switch	2090954-1	Motor Reversing
M11	Relay	2091030-1	
M12	Clutch Ass'y	2090853-1	Magnetic
M13	Motor	2090872-1	
	Printed Board	2091105-2	Assembly (Less Tubes) 403
	Printed Board	2091105-1	Assembly (Less Tubes) 402
	Lamp	2090984-1	Panelescent Dial, Model 403
	Lamp	2090967-1	Panelescent Dial, Model 402

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Lens	2090969-1	Dial, Clear, Golden Touch, Model 402
Lens	2090999-1	Dial, Clear, Model 403
Dial	2090968-1	Calibration Decal, Model 402
Dial	2090988-1	Calibration Decal, Model 403
Pointer	2090966-1	Dial
Knob	2091142-1	Tuning, Volume, Model 402
Knob	2091122-1	Tuning, Volume, Model 403
Knob	2091143-1	Tone, Fader, Model 402
Knob	2091121-1	Tone, Fader, Model 403
Pushbutton	2091189-1	Station, Model 402
Pushbutton	2091190-1	Station, Model 403
Pushbutton	2091189-2	Local, Model 402
Pushbutton	2091189-3	Dist., Model 402
Pushbutton	2091190-2	Loc., Model 403
Pushbutton	2091190-3	Dist., Model 403

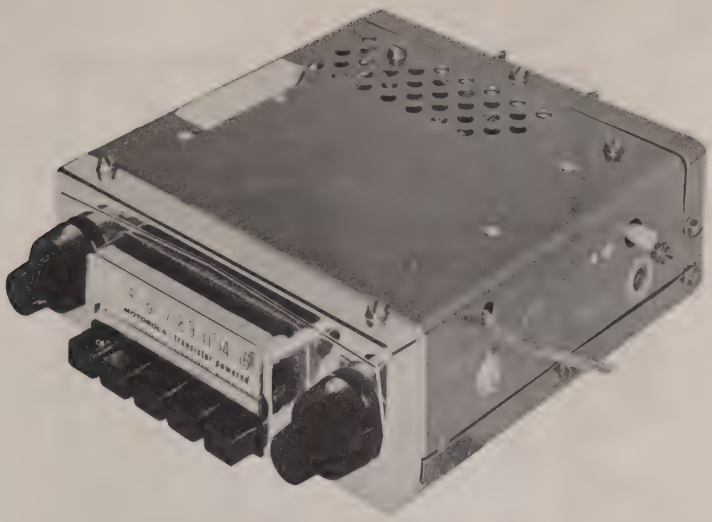
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

PHOTOFACT® Folder

MOTOROLA
MODEL 500X

MOTOROLA
MODEL 500X



TRADE NAME	Motorola Model 500X
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated 3 Tube, 2 Transistor Universal Type Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 1.2 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	535 — 1610KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4...GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528
A8, A9, A10. GENERAL CEMENT #9050-L, 9150
WALSCO #2521, 2524

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to antenna receptacle. Low side to chassis.	262.5KC (400% Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Antenna receptacle thru dummy (Fig. 1).	1610KC	"	"	A5, A6, A7	"
	Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9 and A10) out of coils but not out of coil forms. Repeat Step 2.					
3.	Antenna receptacle thru dummy (Fig. 1).	1200KC	Tuner carriage 9/32" from High end stop.	Across voice coil.	A8, A9, A10	Adjust for maximum output. Repeat Steps 2 and 3.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press pushbutton in firmly.
4. Repeat for remaining pushbuttons.

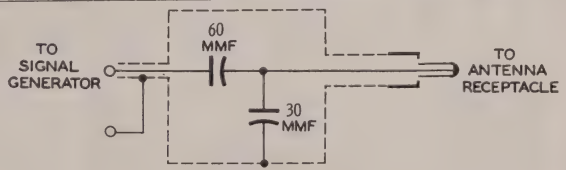


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KD135

SET 504 FOLDER 16

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amp.-Converter	12FX8	V3	Det.-AVC-AF Amp.	12F8
V2	IF Amplifier	12BL6			

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	MN53	Driver		2N591	MN-53	2N591	PNP
X2	2N176	Output	2N235A			2N176	PNP Note 1

Note 1. When replacing, apply DC-4 grease (Part #11M490487) or equivalent to both sides of insulator. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■500	16	23B543279	AFH3-00-95		WP300.85		TVLS-3026.8*	
B	▲500	16							
C	100	16							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

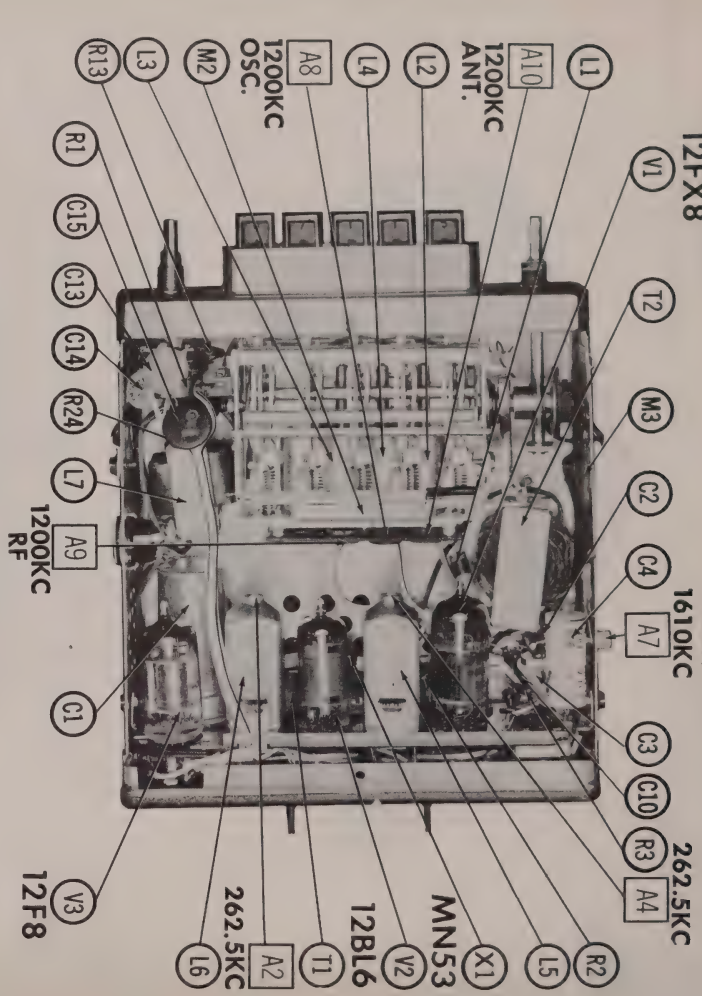
ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	40-430	#20B544017						
C3	.002 1000V		P1088N-002	DD-202	CUB10D2	16DP-1-202	GEM-1022	10TM-D2
C4	.5 100V		P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P5
C5	20-120	#20K561014				424		
C6	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C7	50000		BPD-05	DD-503	CUB2S5	1DP-2-503	GP150	5HK-S50
C8	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C9	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C10	100 N750 10%		N750-DI 100	DTN-100	C10TIU	CCTN-101	CN7-310	10TCU-100
C11	310-390	#20K541700						
C12	27 NPO 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C16	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	25000				DMPS6S25	2DP-4-253	GEM-4125	5HK-S25
C18	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

Motorola Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg		18K543886					Tone
B	2meg							Volume
	1meg Tap							
C	Switch							
R2	2100Ω	2(WW)	18K544022					Power Off-On
	250Ω Stop							Bias

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	22K	
R4	1meg	
R5	3300Ω	
R6	1meg	
R7	390K	Note 1
R8	47K	
R9	3.3meg	
R10	330Ω	

ITEM No.	RATING	REMARKS
R11	4.7meg	
R12	4.7meg	
R13	100K	
R14	3.3meg	
R15	3300Ω	
R16	100Ω	
R17	15K	
R18	22K	

ITEM No.	RATING	REMARKS
R19	820Ω	
R20	10Ω Cold	#6K543800
R21	10Ω	
R22	82Ω 1W	
R23	330Ω	
R24	47Ω 2W	

Motorola Part Number.
Note 1. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	RF Choke	24K537545	BC-562	4604	VP-9	1.8uh ①
L2	Ant. Coil	24K563896				
L3	RF Coil	24K563896				
L4	Osc. Coil	24B563293				
L5	Input IF Trans.	24B543286	BC-350	12-H1	RF-3	
L6	Output IF Trans.	24K543287	BC-354	12-H6		

① IRC Part #CL-1

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	MOTOROLA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L7	1.2A	.3Ω	.010 HY	25B543338						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.8	1	25K543842					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	22Ω	3-4Ω	25C543445						

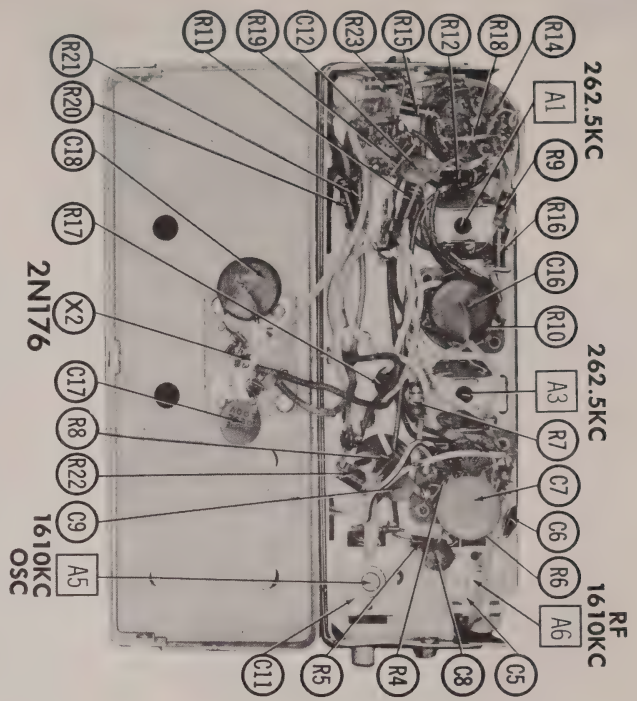
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	5"x 7"	PM	3-4Ω	50C541964	57A21	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	9A 32V	65K16248	1V541705	307009 (SFE 9A 32V)	155009	SFE 9	HRH

CHASSIS—BOTTOM VIEW



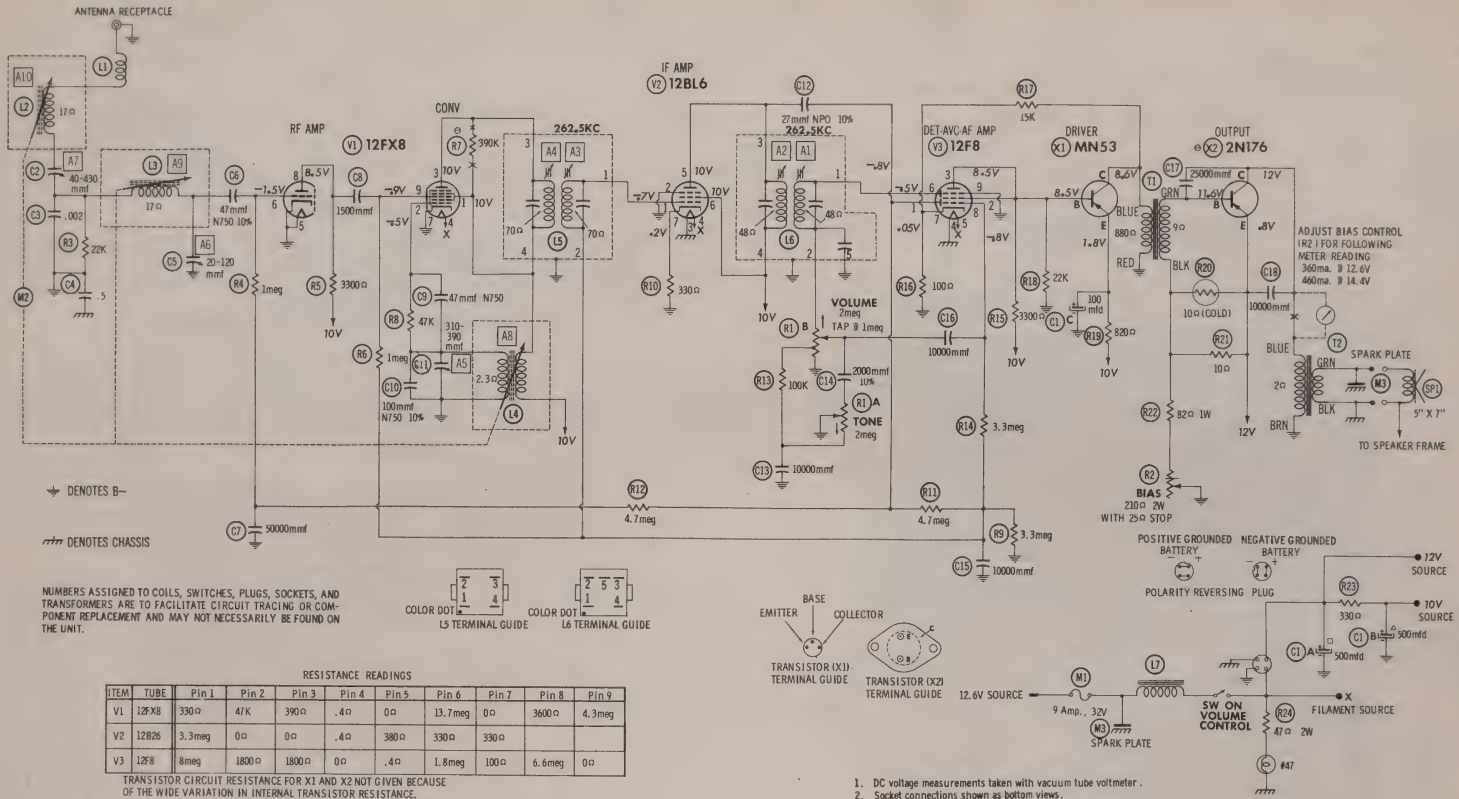
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Tuner	77D563900	AT-306, Complete
M3	Spark Plate	64K530177	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36B543876	Tuning, Volume
Knob	36B543877	Tone
Knob	36K543878	Dummy
Pointer	1V544133	Dial
Mask	13B544013	Dial
Scale	34B544001	Dial



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12FX8	330Ω	47K	390Ω	.4Ω	0Ω	13.7meg	0Ω	3600Ω	4.3meg
V2	12BL6	3.3meg	0Ω	0Ω	.4Ω	380Ω	330Ω	330Ω		
V3	12F8	8meg	1800Ω	1800Ω	0Ω	.4Ω	1.8meg	100Ω	6.6meg	0Ω

TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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MOTOROLA
MODEL 500X

PHOTOFACT® Folder

NORELCO
MODEL L3X86T

NORELCO
MODEL L3X86T

NORELCO
MODEL L3X86T

TRADE NAME	Norelco Model L3X86T		
SUPPLIER	North American Phillips Co., Inc., 230 Duffy Ave., Hicksville, N. Y.		
TYPE SET	Battery Operated Transistorized Portable BC-SW Receiver		
POWER SUPPLY	9 Volts DC	RATING	14MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	512—1635KC		30MA @ 9 Volts DC (Signal, Normal Volume)
		SHORT WAVE	1.7 — 4.1MC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A7, A9..... GENERAL CEMENT #8721, 8722
WALSCO #2519

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .033mfd to base of converter. Low side to chassis.	452KC (400~ Mod.)	(BC) Tuning gang fully closed.	Across voice coil.	A1, A2, A3, A4, A5, A6	Adjust for maximum output.
2.	Loop	512KC	"	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1635KC	Tuning gang fully open.	"	A8	"
4.	"	1.6MC	(SW) Tuning gang fully closed.	"	A9	"
5.	"	4.1MC	(SW) Tuning gang fully closed.	"	A10	"
6.	"	600KC	(BC) 600KC Signal	"	A11	"
7.	"	1500KC	(BC) 1500KC Signal.	"	A12	"
8.	"	1.8MC	(SW) 1.8MC Signal.	"	A13	"
9.	"	3.8MC	(SW) 3.8MC Signal.	"	A14	"

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KF097

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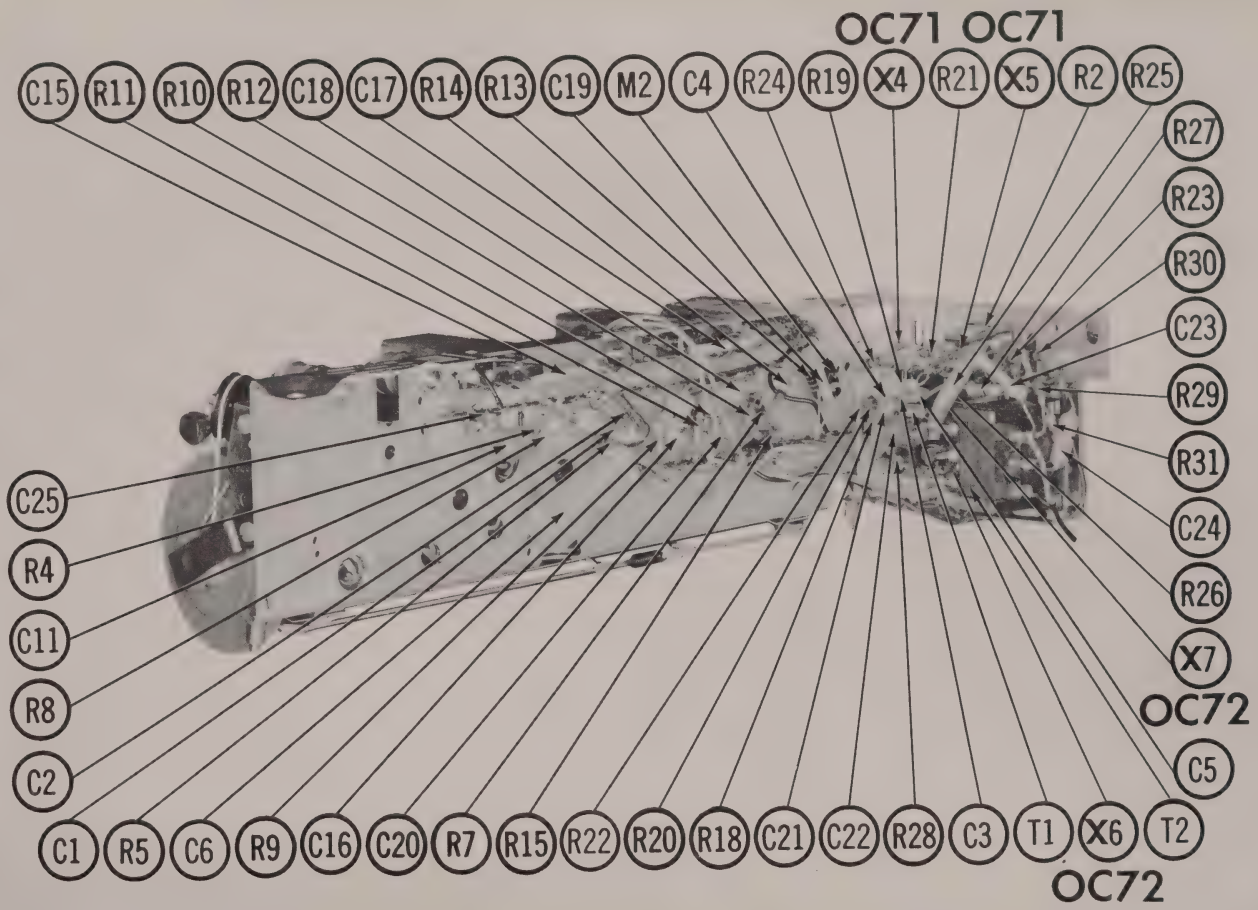
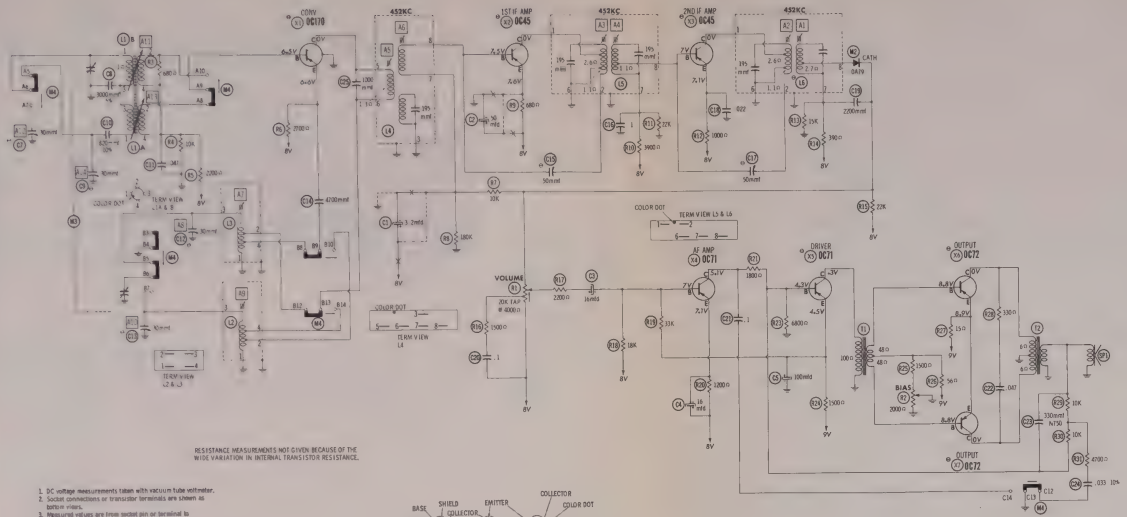
SET 504 FOLDER 17



CHASSIS BOTTOM VIEW



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

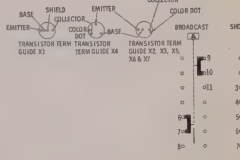
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

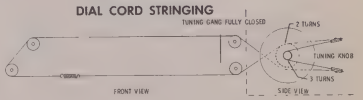
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.





A PHOTOFACT STANDARD NOTATION SCHEMATIC

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NORELCO
MODEL L3X86T

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	OC170 ①	Converter		2N371		2N371	PNP
X2	OC45 ②	1st IF Amp.		2N410	2N482	2N410	PNP
X3	OC45 ②	2nd IF Amp.		2N410	2N482	2N410	PNP
X4	OC71	AF Amp.		2N406		2N406	PNP
X5	OC71 ③	Driver		2N406		2N406	PNP
X6	OC72 ③	Output		2N270		2N408	PNP } Matched
X7	OC72 ③	Output		2N270		2N408	PNP } Pair

① Alternate Type 2N371 may be used.
② Alternate Type 2N410 may be used.
③ Has Heat Sink.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	NORELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	3.2	70	909/E3.2	PRS1400	NLW3-100	TT80X4	TD-4-150	TE-1403	
C2	50	12.5	909/B50	XPP-15050	BBR50-25	TT15X50	ML50-15	TE-1160	
C3	16	16	AC5703/16	XPP-25015	NLW15-25	TT25X15	ML15-25	TE-1205	
C4	16	16	AC5703/16	XPP-25015	NLW15-25	TT25X15	ML15-25	TE-1205	
C5	100	16	909/B100	PRS1270	BBR100-25	TC2501	ML100-25	TE-1211	
C6	250	12.5	910/B250	PRS1210	BR2502	TC50025	TD-250-15	TE-1138	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	30	Note 1			1R5D3	CM-20B-302J	MCE461	MS-23
C8	3000 5%							
C9	30	Note 1				VCM-20-821F		
C10	820							

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C11	.047 125V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C12	30	Note 1						
C13	30	Note 1						
C14	4700		SI 4700	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C15	50	Note 1						
C16	.1 125V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C17	50	Note 1						
C18	.022 125V		P288N-022	DD-203	CUB2S22	4DP-2-223	GEM-4122	2TM-S22
C19	2200		SI 2200	DD-222	BYA10D22	CCD-221	B-222	5HK-D22
C20	.1 125V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C21	.1 125V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C22	.047 125V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C23	330 N750		N750-SI 330	TCN-330	C10T33U		CN7-333	10TCU-T33
C24	.033 125V 10%		V84C2S33		PM6S33	4DP-2-333		6TM-S33
C25	1000		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10

Note 1. Nominal Value.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	NORELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	20K 4000Ω Tap	½	B163965					Volume
R2	2000Ω	½	WE39597					Bias

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	680Ω	
R4	10K	
R5	2200Ω	
R6	2700Ω	
R7	10K	
R8	180K	
R9	680Ω	
R10	3900Ω	
R11	22K	
R12	1000Ω	

ITEM No.	RATING	REMARKS
R13	15K	
R14	390Ω	
R15	22K	
R16	1500Ω	
R17	2200Ω	
R18	18K	
R19	33K	
R20	1200Ω	
R21	1800Ω	
R22	220Ω	

ITEM No.	RATING	REMARKS
R23	6800Ω	
R24	1500Ω	
R25	1500Ω	
R26	56Ω	
R27	15Ω	
R28	330Ω	
R29	10K	
R30	10K	
R31	4700Ω	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA NORELCO PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1A	SW Loopstick	A380395				
B	BC Loopstick					
L2	SW Osc. Coil	A312882				
L3	BC Osc. Coil	A312881				
L4	1st IF Trans.	A312884 *				
L5	2nd IF Trans.	A312842 †				
L6	3rd IF Trans.	A312841 †				

* Includes 195mmf capacitor.
† Includes (2) 195mmf capacitors.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	SEC.	REPLACEMENT DATA NORELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	1.3	1	A316206					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.	REPLACEMENT DATA NORELCO PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	36Ω CT	3-4Ω	918/08						

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA NORELCO PART No.	QUAM PART No.	NOTES
SP1	4"x 6"	PM	3-4Ω	AD3460Z	46A15Z3.8	

BATTERIES

ITEM No.	VOLTAGE	NORELCO PART No.	REPLACEMENT DATA BURGESS "A"	BURGESS "B"	EVEREADY "A"	EVEREADY "B"	MALLORY "A"	MALLORY "B"	NOTES
M1	1.5V	*		230 *		A-100 *		M-13R *	* 6 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA NORELCO PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M2	OA79		1N295	1N295	1N295	Detector (Pigtail)

MISCELLANEOUS

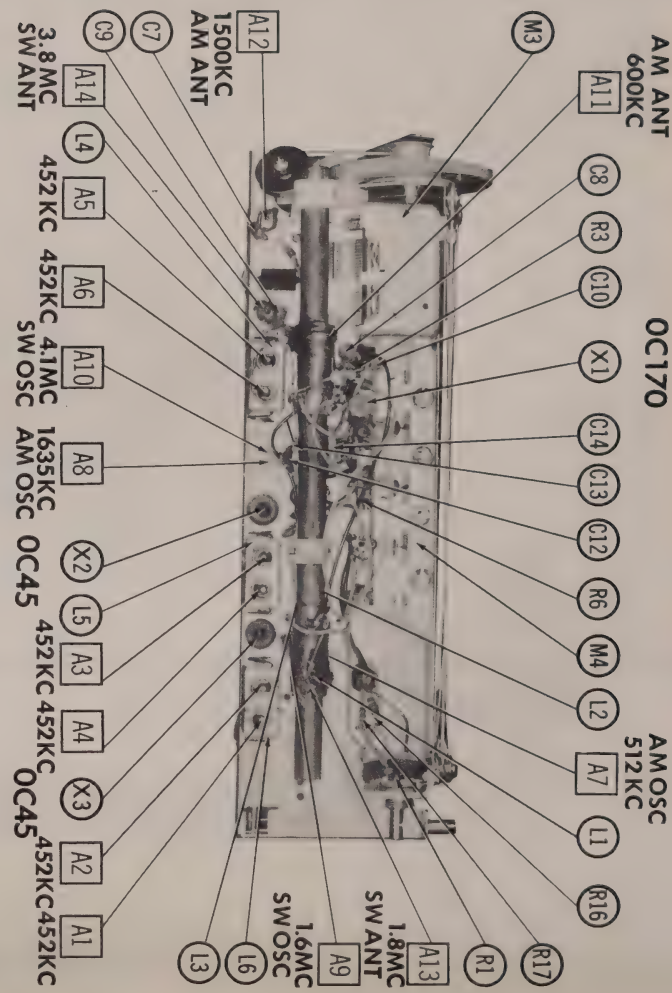
ITEM No.	PART NAME	NORELCO PART No.	NOTES
M3	Tuning Cap.	4900204	2 Gang (Ant. 8-533mmf, Osc. 7-181mmf)
M4	Switch	A379058	Pushbutton Unit (Include Off, Tone, AM & SW Switches)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	A377290	Tuning
Knob	A377289	Volume
Pushbutton	A902349	
Dial	A395643	
Cabinet	A378039	
Handle	A367324	

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE*

MODEL 1-T-5J

TRADE NAME	RCA Victor Models 1-T-5J, 1-T-5L (Ch. RC-1195)
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N. J.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	6 Volts DC
RATING	12 MA@6 Volts DC (No Signal, Min. Volume) 25 MA@6 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	540 – 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A7, A8... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A4, A5, A6..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to RF stator lug of tuning gang. Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	"	"	A5, A6	"
4.	"	600KC	600KC Signal.	"	A7, A8	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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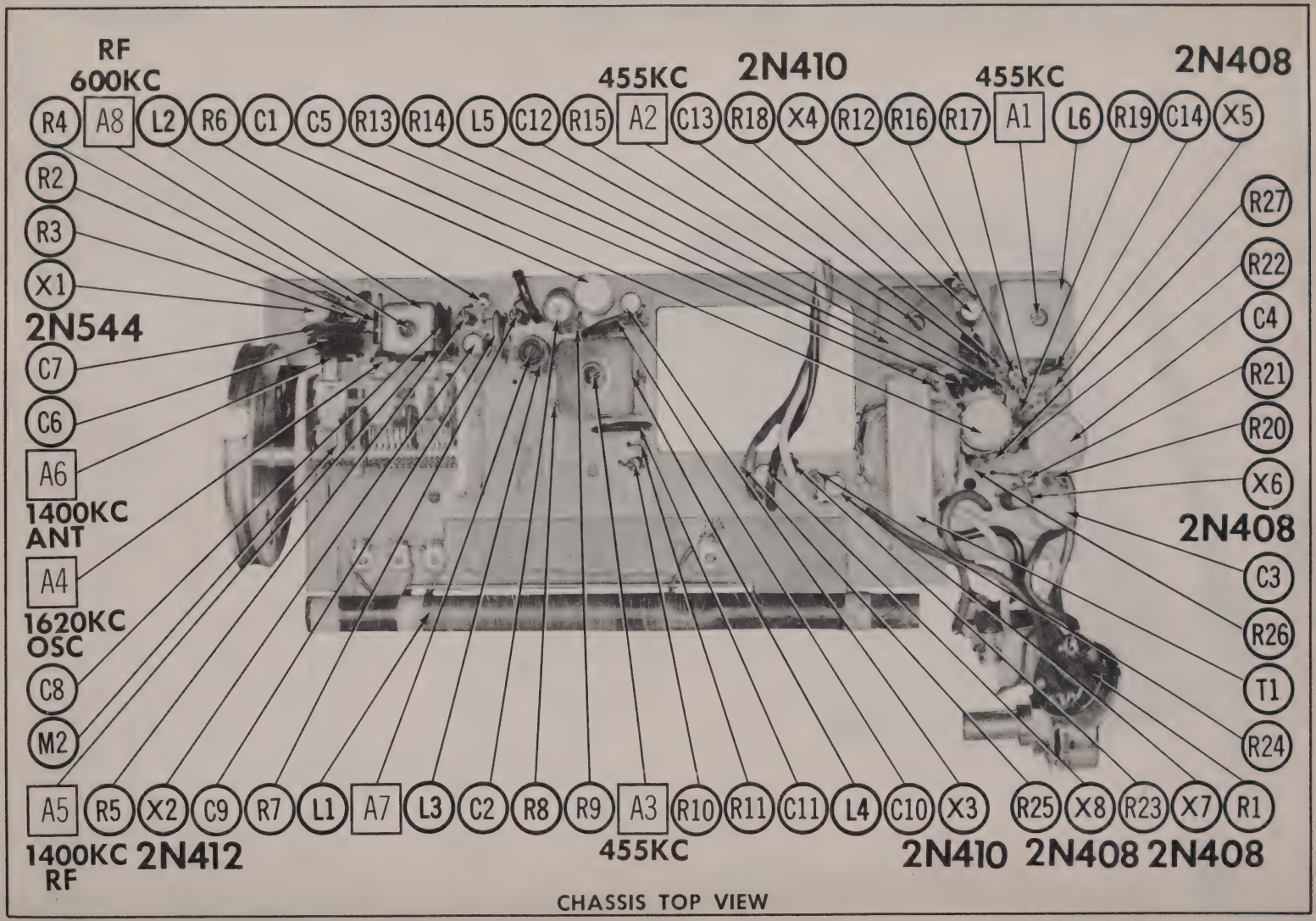
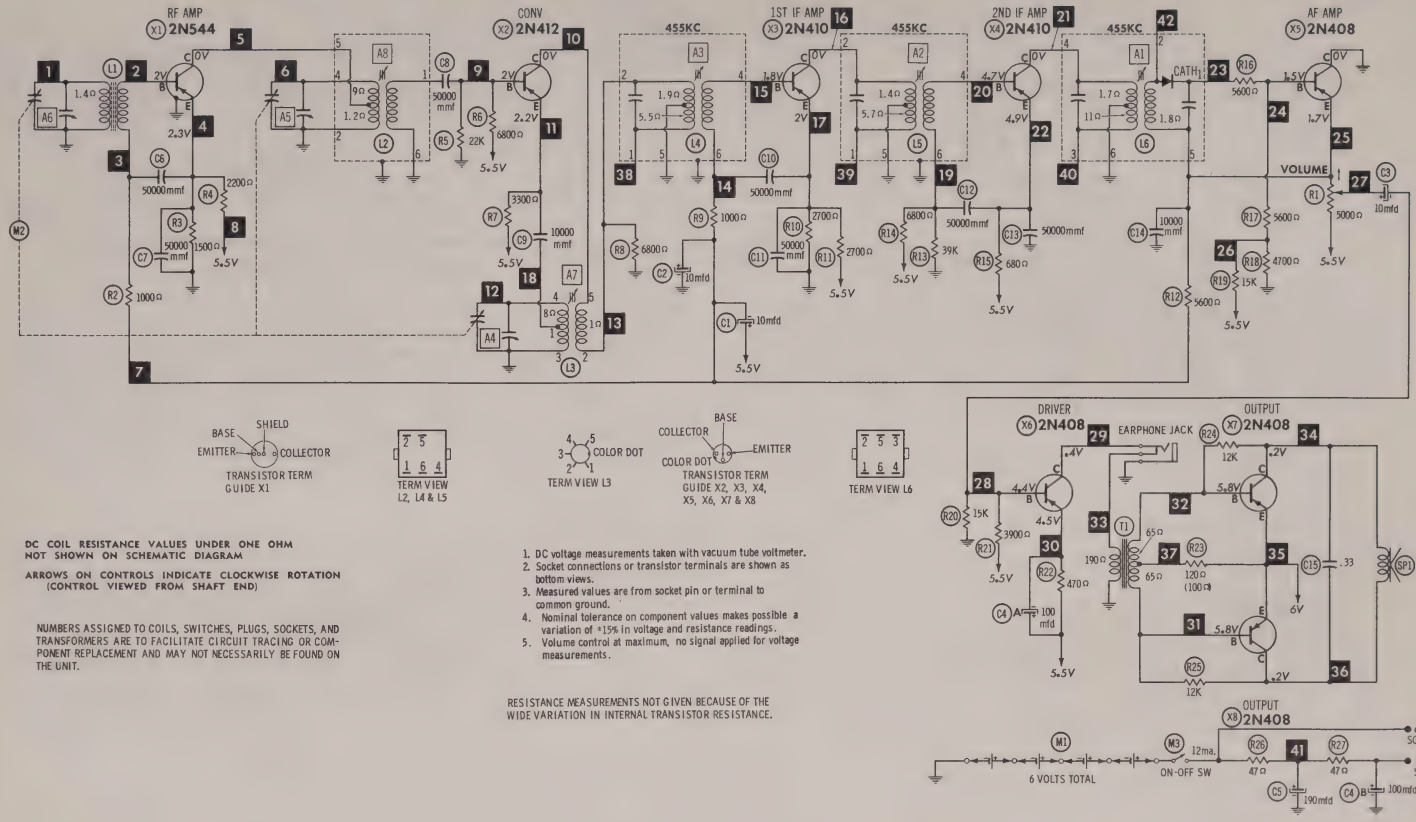
RCA VICTOR MODELS
1T5J, 1T5L (Ch. RC-1195)

RCA VICTOR MODELS
1T5J, 1T5L (Ch. RC-1195)

SET 504 FOLDER 18



CHASSIS TOP VIEW



TRANSISTOR TERM GUIDE X1

TERM VIEW L2, L4 & L5

TERM VIEW L3

TRANSISTOR TERM GUIDE X2, X3, X4, X5, X6, X7 & X8

TERM VIEW L6

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE™

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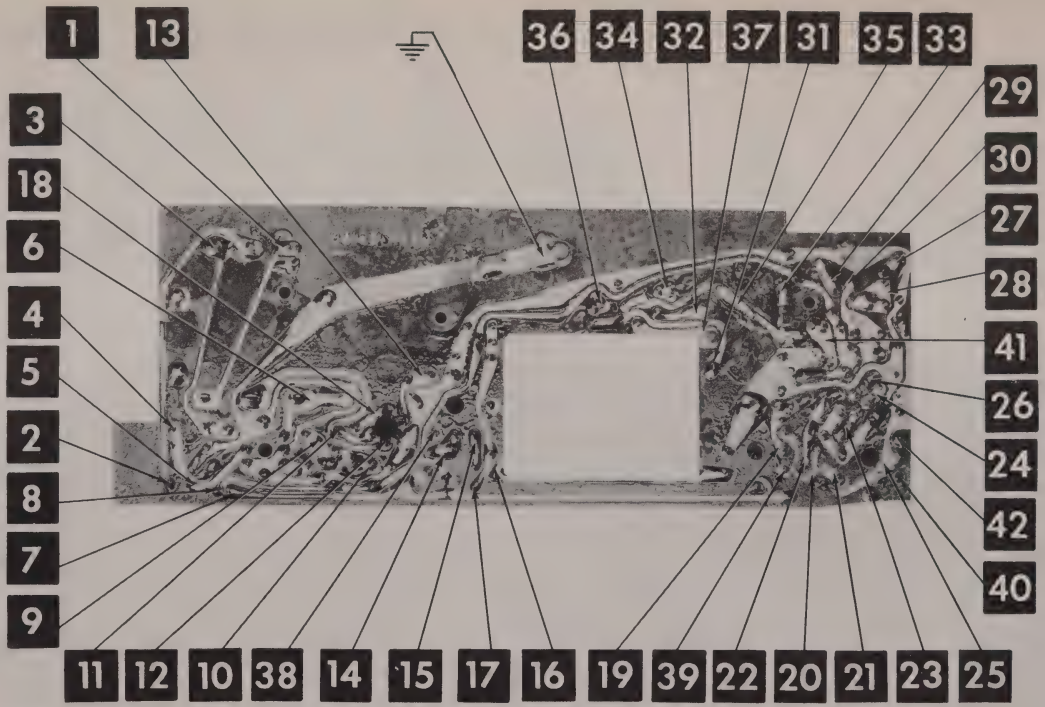
RCA VICTOR MODELS
1T5J, 1T5L (Ch. RC-1195)



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PRINTED BOARD

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N544	RF Amplifier		2N544		2N544	PNP
X2	2N412	Converter		2N412	2N486	2N412	PNP
X3	2N410	1st IF Amplifier		2N410	2N483	2N410	PNP
X4	2N410	2nd IF Amplifier		2N410	2N483	2N410	PNP
X5	2N408	AF Amplifier		2N408	2N362	2N408	PNP
X6	2N408	Driver		2N408	2N362	2N408	PNP
X7	2N408	Output		2N408	2N633	2N408	PNP) Matched
X8	2N408	Output		2N408	2N633	2N408	PNP) Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	RCA VICTOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	10	10	103382	BCD10010	ECPB408	PET1340		VL-1127	
C2	10	10	106114	XPP10010	NLW10-15	TT12X10	ML10-15	TE-1114	
C3	10	10	103382	BCD10010	ECPB408	PET1340		VL-1127	
C4A	100	10	) 108151			TT15X100			
B	100	10	)			TT15X100			
C5	190	10	106443	BCD10190	ECPB421	TT15X100 †		VL-1144	

† Use two units in parallel.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	50000		BPD-05	DD-503	DPMS2S5	DP-2-503	BF-150	5HK-S50
C7	50000		BPD-05	DD-503	DPMS2S5	DP-2-503	BT-150	5HK-S50
C8	50000		BPD-05	DD-503	DPMS2S5	DP-2-503	BT-150	5HK-S50
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	BT-110	5HK-S10
C10	50000		BPD-05	DD-503	DPMS2S5	DP-2-503	BT-150	5HK-S50
C11	50000		BPD-05	DD-503	DPMS2S5	DP-2-503	BT-150	5HK-S50
C12	50000		BPD-05	DD-503	DPMS2S5	DP-2-503	BT-150	5HK-S50
C13	50000		BPD-05	DD-503	DPMS2S5	DP-2-503	BT-150	5HK-S50
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	.33 200V		P288N-33		DPMS4P33	2DP-5-334	GEM-2033	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA VICTOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	½	108774			† QJ-1352R		Volume

† "Concentrikit" equivalent: K-15 kit with base elements and shafts: B13-114, P17-028.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	1000Ω	
R3	1500Ω	
R4	2200Ω	
R5	22K	
R6	6800Ω	
R7	3300Ω	
R8	6800Ω	
R9	1000Ω	
R10	2700Ω	

ITEM No.	RATING	REMARKS
R11	2700Ω	
R12	5600Ω	
R13	39K	
R14	6800Ω	
R15	680Ω	
R16	5600Ω	
R17	5600Ω	
R18	4700Ω	
R19	15K	

ITEM No.	RATING	REMARKS
R20	15K	
R21	3900Ω	
R22	470Ω	
R23	120Ω	(100Ω) *
R24	12K	
R25	12K	
R26	47Ω	
R27	47Ω	

* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		RCA VICTOR PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	108773				
L2	RF Trans.	108776				
L3	Osc. Coil	108160				
L4	1st IF Trans.	108157				
L5	2nd IF Trans.	108158				
L6	3rd IF Trans.	108775				

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	RCA VICTOR PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	1	108164					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	RCA VICTOR PART No.	QUAM PART No.	
SP1	4"x 6"	PM	130Ω CT	108771		

BATTERIES

ITEM No.	VOLTAGE	RCA VICTOR PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	VS035 *		130 *		635 *		M-14R *	* 4 Required

MISCELLANEOUS

ITEM No.	PART NAME	RCA VICTOR PART No.	NOTES
M2	Tuning Cap	108772	3 Gang
M3	Switch	108457	Power On-Off
	Printed Board	108818	Less Antenna, Tuning Cap, Transformers, & Transistors

CABINETS & CABINET PARTS

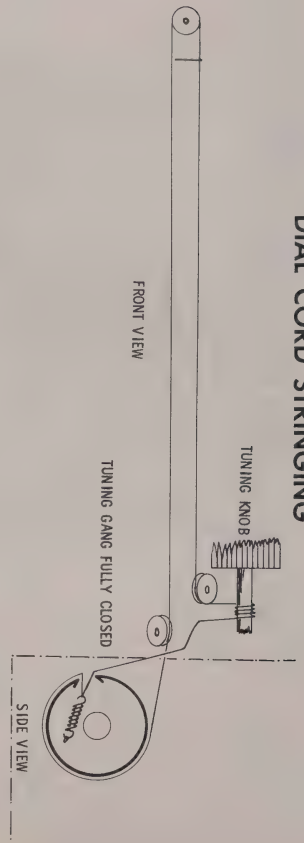
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	108754	Tuning, Aqua
Knob	108758	Tuning, Charcoal
Knob	108753	Volume, Aqua
Knob	108757	Volume, Charcoal
Dial Pointer	108759	
Tuning Dial	108766	
Dial Glass	108765	
Cabinet	Y7095	Front & Rear Sections, Model 1-T-5L
Cabinet	Y7096	Front & Rear Sections, Model 1-T-5J
Handle	108751	Aqua
Handle	108755	Charcoal

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

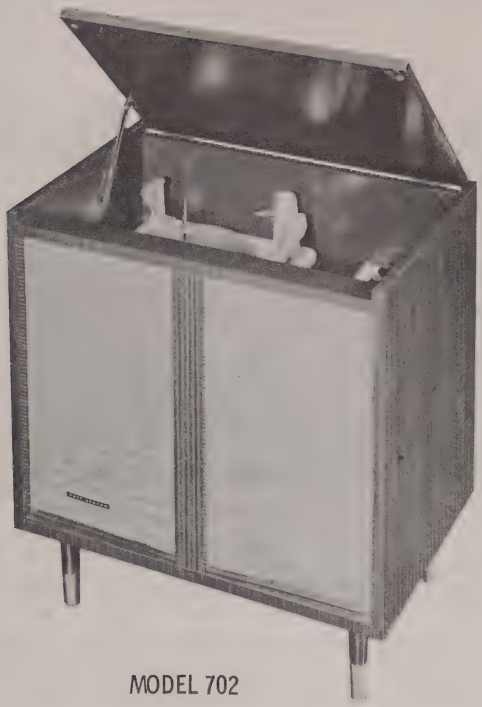
DIAL CORD STRINGING



PHOTOFACT® Folder

**STEELMAN MODELS
552, 702**

STEELMAN MODELS
552, 702



MODEL 702

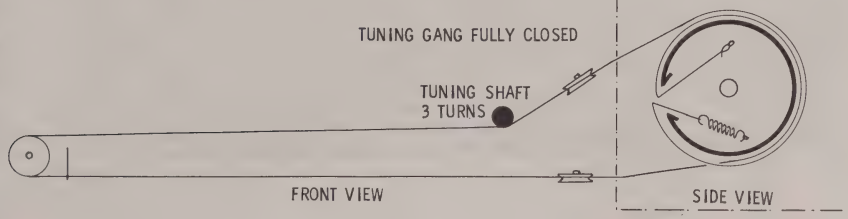
STEELMAN MODELS
552, 702

TRADE NAME	Steelman Models 552, 702		
MANUFACTURER	Steelman Phono & Radio Co., 2-30 Anderson Ave., Mount Vernon, N. Y.		
TYPE SET	AC Operated 9 Tube FM-AM Receiver With 4 Speed Automatic Record Changer		
POWER SUPPLY	110 – 120 Volts AC	RATING	50 Watts, .48 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	535 – 1640KC	FREQ. MOD.	88 – 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER USED IN MODEL 702 – SEE SIMILAR MONARCH UA8 – PHOTOFACT SET 381 FOLDER 11 OR RECORD CHANGER MANUAL RC-11

FOR SERVICE INFORMATION ON RECORD CHANGER PART #300071 USED IN MODEL 552 – SEE SIMILAR V-M 1201 – PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER RC-12

DIAL CORD STRINGING



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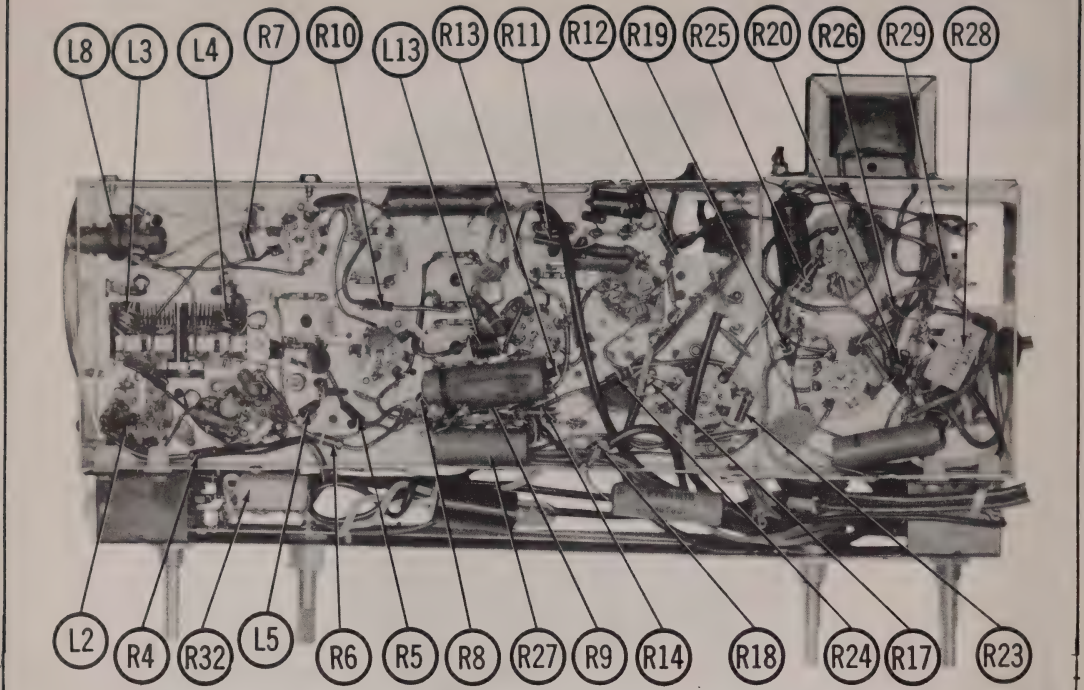
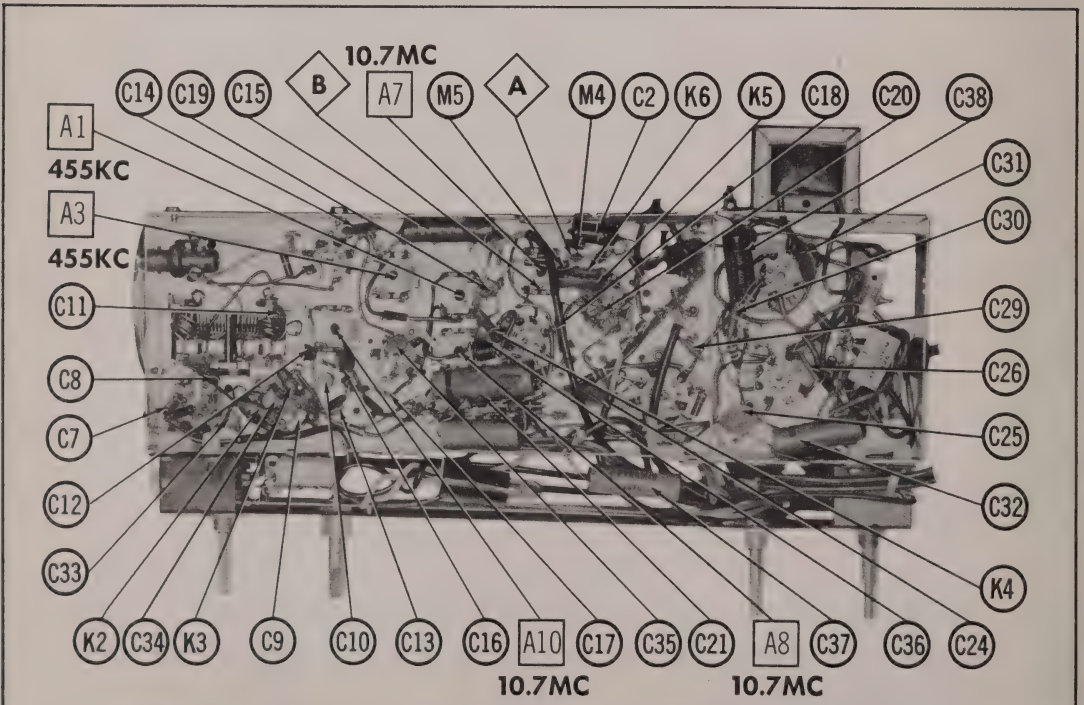
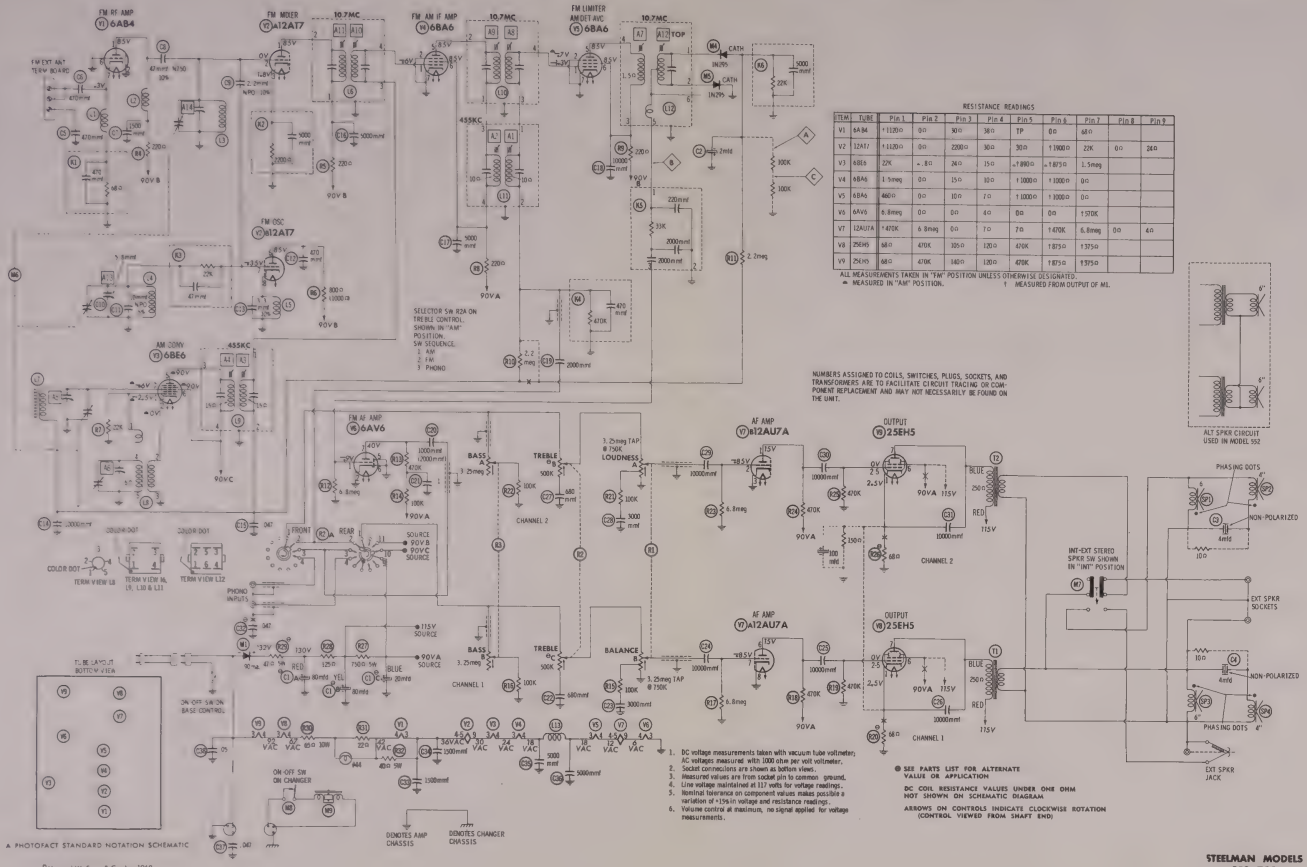
SET 504 FOLDER 19



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



CHASSIS BOTTOM VIEW - ALIGNMENT, CAPACITOR & MISC. IDENT.


FM RF AMP V1 6AB4
FM MIXER V2 12AT7
10.7MC
FM AM IF AMP V4 6BA6
FM LIMITER AMDET AVC V5 6BA6
FM EXT ANT TERM BOARD
FM OSC V7 12AT7
AM CONV V7 6BE6
455KC
FM AF AMP V6 6AV6
AF AMP V7 12AU7A
OUTPUT V8 25EH5
SELECTOR SW R2A ON TREBLE CONTROL SHOWN IN "AM" POSITION. SW SEQUENCE. 1. AM 2. FM 3. PHONO
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
RESISTANCE READINGS
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
MEASURED IN "AM" POSITION.
MEASURED FROM OUTPUT OF M1.
ALT SPKR CIRCUIT USED IN MODEL 552
PHASING DOTS
NON-POLARIZED
INT-EXT STEREO SPKR SW SHOWN IN "INT" POSITION
EXT SPKR SOCKETS
EXT SPKR JACK
TUBE LAYOUT BOTTOM VIEW
ON-OFF SW ON BASE CONTROL
ON-OFF SW ON CHANGER
DENOTES AMP CHASSIS
DENOTES CHANGER CHASSIS
CHANNEL 1
CHANNEL 2
SOURCE
PHONO INPUTS
COLOR DOT
TERM VIEW L8
TERM VIEW ML L9, L10 & L11
TERM VIEW L12
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AB4	†.11200	0Ω	30Ω	38Ω	TP	0Ω	68Ω		
V2	12AT7	†.11200	0Ω	2200Ω	30Ω	30Ω	†.19000	22K	0Ω	24Ω
V3	6BE6	22K	~.8Ω	24Ω	15Ω	~†.8900	~†.8750	1.5meg		
V4	6BA6	1.5meg	0Ω	15Ω	10Ω	†.10000	†.10000	0Ω		
V5	6BA6	460Ω	0Ω	10Ω	7Ω	†.10000	†.10000	0Ω		
V6	6AV6	6.8meg	0Ω	0Ω	4Ω	0Ω	0Ω	†.570K		
V7	12AU7A	†.470K	6.8meg	0Ω	7Ω	7Ω	†.470K	6.8meg	0Ω	4Ω
V8	25EH5	68Ω	470K	325Ω	120Ω	470K	†.875Ω	†.375Ω		
V9	25EH5	68Ω	470K	340Ω	120Ω	470K	†.875Ω	†.375Ω		

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

STEELMAN MODELS 552, 702

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loudness control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A7 thru A12... GENERAL CEMENT #5097, 8727
WALSCO #2515
A3, A4..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A5, A6, A14..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400~ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	1400KC Signal.	"	A6	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

Connect two matched 100K (± 1%) resistors in series from point (A) to chassis. The junction of these two resistors is alignment point (C) as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .01mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point (A). Common to chassis.	A7, A8, A9, A10, A11	Adjust for maximum deflection.
5.	"	"	"	DC probe thru 1meg to point (B). Common to point (C).	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .01mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point (A). Low side to chassis.	A7, A8, A9, A10, A11	Disconnect stabilizing capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	Vert. amp. thru 27K to point (B). Low side to chassis.	A12	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	Across FM Antenna terminals.	106MC (Unmod.)	(FM) 106MC	DC probe to point (A). Common to chassis.	A13, A14	Adjust for maximum deflection.

FIG. 1

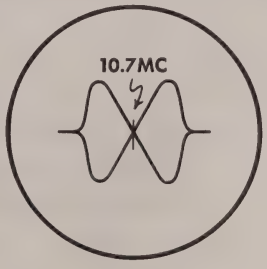


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	FM RF Amplifier	6AB4
V2	FM Mixer-FM Osc.	12AT7
V3	AM Converter	6BE6
V4	FM IF Amp. -AM IF Amp.	6BA6
V5	FM Limiter-AM Det. -AVC	6BA6
V6	FM AF Amplifier	6AV6
V7	Channel 1 AF Amp. - Channel 2 AF Amp.	12AU7A
V8	Channel 1 Output	25EH5
V9	Channel 2 Output	25EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	80	150	583021		BBRT84215	TCT3117	TDLT-7	TVA-2460	①
B	80	150				TC48		TVA-1418	
C	20	150							
C2	2	50	581036	PRS1300	BBR2-50	TC302	TD-2-50	TVA-1301	
C3	4	15NP	925391	PRS7405	BBR4-150	TCN504	TD-4-150	TVANS-1150 *	
C4	4	15NP	925391	PRS7405	BBR4-150	TCN504	TD-4-150	TVANS-1150 *	

① Some versions may use 80-40-20mfd in this application.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

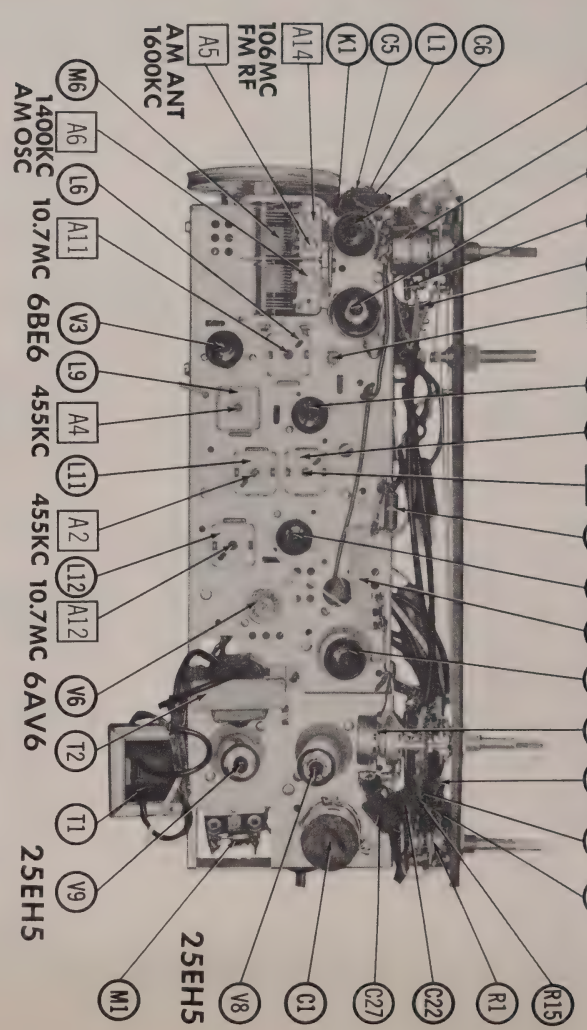
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C6	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C7	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C8	47 N750 10%		N750-SI 47	TCN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C9	2.2 NPO 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C10	.5-8	#515049		829-10				
C11	10 NPO 5%		NPO-SI 10	TCN-10	C10Q1C	CCTO-100	CNO-510	10TCC-Q10
C12	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C13	3.3 10%		NPO-SI 3.3	TCZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C16	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C17	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C18	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C19	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C20	1000	(2000) †	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C21	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C22	680		1468-00068	DD-681	5W5T68	CM-19B-681M	MCJ249	1FM-368
C23	3000		SI 3000	DD-302	BYA10D3	CCD-302	GP230	5HK-D33
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	680		1468-00068	DD-681	5W5T68	CM-19B-681M	MCJ249	1FM-368
C28	3000		SI 3000	DD-302	BYA10D3	CCD-302	GP230	5HK-D33
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	.047 400V	Note 1	P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C33	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C34	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C35	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C36	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C37	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C38	.05 400V		P488N-05	DD-503	CUB4S47	4DP-3-503	GEM-415	4TM-S5

Note 1. Not used in Model 552.
† Alternate Value.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	3.25meg 750K Tap	½	368070					Loudness, Channel 2
B	3.25meg 750K Tap	½						Balance, Channel 1
R2A	Switch		368041					Selector Switch
B	500K	½	①					Treble, Channel 2
C	500K	½	①					Treble, Channel 1
R3A	3.25meg	½	368042				FC36A	Bass, Channel 2
B	3.25meg	½		B-85			RU36A	Bass, Channel 1
C	Shaft			Not Req.			CS3500	
D	Switch			KR-1			US41	Power On-Off

① Some versions may use 250K in this application.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	220Ω	
R5	220Ω	
R6	800Ω	(1000Ω) *
R7	22K	
R8	220Ω	
R9	220Ω	
R10	2.2meg	
R11	2.2meg	
R12	6.8meg	
R13	470K	
R14	100K	

ITEM No.	RATING	REMARKS
R15	100K	
R16	100K	
R17	6.8meg	
R18	470K	
R19	470K	
R20	68Ω	Note 1
R21	100K	
R22	100K	
R23	6.8meg	
R24	470K	
R25	470K	

ITEM No.	RATING	REMARKS
R26	68Ω	Note 1
R27	750Ω 5W	Pt. #510029 IRC#PW5-750Ω
R28	125Ω	
R29	47Ω 5W	Pt. #510028 ① IRC#FR-47Ω
R30	65Ω 10W	Pt. #510033 IRC#PW10-65Ω
R31	22Ω	
R32	40Ω 5W	Pt. #510030 IRC#PW5-40Ω

* Alternate Value.
① Fuse Type.

Note 1. Not used in some versions.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	STEELMAN PART No.	REPLACEMENT DATA
K1	FM Antenna Filter	470mmf, 68Ω	420013	
K2	FM Mixer Cathode	5000mmf, 2200Ω	420016	
K3	FM Osc. Grid	47mmf, 22K	420019	
K4	AM Diode Filter	470mmf, 470K	420014	Centralab RC-465 Sprague PRC-3
K5	3rd FM IF Secondary	220mmf, 2000mmf, 2000mmf, 33K	420017	
K6	Rat. Det. Diode Filter	5000mmf, 22K	420015	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		STEELMAN PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	RF Choke	455077	BC-562	4604		1.7uh
L2	RF Choke	455077	BC-562	4604		1.7uh
L3	FM RF Coil	455079				
L4	FM Osc. Coil	455078				
L5	Cathode Coil	455077	BC-562	4604		1.7uh
L6	1st FM IF Trans.	450005	FM-254	1463		
L7	Loopstick	464030				
L8	AM Osc. Coil	455080	BC-393	69-OSC		
L9	1st AM IF Trans.	450023	BC-352	12-C1	RF-1	
L10	2nd FM IF Trans.	450005	FM-254	1463		
L11	2nd AM IF Trans.	450013	BC-353	12-C2	RF-2	
L12	Ratio Det.	450006	FM-255	1465		
L13	Fil. Choke	455081	BC-562	4604		1.4uh

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	STEELMAN PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2800Ω	3-4Ω	430566	A-2928	AU-603	A-3876	22S46	S-1X	
T2	2800Ω	3-4Ω	430566	A-2928	AU-603	A-3876	22S46	S-1X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	STEELMAN PART No.	QUAM PART No.	
SP1	6"	PM	3-4Ω	406001 *	6A31	* Used in Model 702
SP2	4"	PM	3-4Ω	404003 *	4A07	♦ Used in Model 552
SP3	6"	PM	3-4Ω	406001 *	6A31	
SP4	4"	PM	3-4Ω	404003 *	4A07	
	6"	PM		406006 ♦		

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	STEELMAN PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.090A	380020 *	RE504 *	1N1763 *	2F4 *	SR200 *	* Silicon Type

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								
	STEELMAN PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M2		76TS-TB		26S	S1-1 & S3-3	49		8TA4-S	N-8TA-S

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA		REMARKS
	STEELMAN PART No.	JENSEN PART No.	
M3		CRA-55 † or CRA-55D ♦	† Jewel ♦ Diamond
		CRA-55X † or CRA-55XD ♦	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		STEELMAN PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M4	1N295	359021	1N295	1N295	1N295	FM Detector (Pigtail)
M5	1N295	359021	1N295	1N295	1N295	FM Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	STEELMAN PART No.	NOTES
M6	Tuning Cap.	590053	FM AM 4 Gang(AM Sections: Ant. 17-290mmf, Osc. 29-170mmf)
M7	Switch		Int. Stereo, Ext. Stereo (DPDT Slide Type)
M8	Switch		Changer Off-On (Part of Changer)
M9	Motor		Turntable Drive (Part of Changer)

PARTS LIST AND DESCRIPTIONS (Continued)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial	800146	Glass With Artwork, Model 552
Dial Pointer	674041	Dial
Knob	272272	Tuning, Volume, Dummy Dial, Model 552
Knob	272267	Function, Clutch, Top, Model 552
Knob	272293	Function, Clutch, Bottom, Model 552
Knob	272294	Function Selector, Model 552
Cabinet	241580	Black & White, Model 552

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

INDEX

A cumulative index is included as a part of this Folder. Upon finding that a new tube is not listed on the roll chart of a tester covered in this service, refer to the latest Tube Tester Data Index to determine in which PHOTOFACT Set the data was published. If listed, reference to that Folder will provide the necessary data.

TUBE TYPES	JACKSON 598, 648, and 658	TUBE TYPES	JACKSON 598, 648, and 658	TUBE TYPES	JACKSON 598, 648, and 658
1H2	500	6EV7	504	10EW7	504
1N2	500	6EW7	504	12DW7	504
2ES5	500	6FE5	500	14GT8	500
3DG4	500	6FE8	500	22DE4	500
6CW7	504	6FG5	500	35GL6	500
6EH7	500	6FV8	504	50BM8	504
6EJ7	500	6FW8	500	50FE5	500
6EM7	500	6GM6	500	7408	500
6EU7	500	6GY8	504	7543	500
6EV5	500	7DJ8	504	7591	504

JACKSON MODEL 598

SET 504

SUPPLEMENTS LATEST ROLL CHART 598-2

Tube Type	A.	B.	Fil. C.	Cont. D.	D.	E.	F.	G.
6CW7	6.3	4YZ		5	9	6		53
		4YZ			3	2		53
6EV7	6.3	4		3	6	7	Z	71
		4			1	2	Z	71
6EW7	6.3	4Y		5	6	7		52
		4	2		1	3		18
6FV8	6.3	4Z		5	6		7	64
		4YZ			2	1		59
6GY8	6.3	5		4	6	7	Y	42
		5Y			9	3		52
		5Y			2	1		50
7DJ8	7.5	4Z		5	6	7		34
		4Z			1	2		34
10EW7	10.5	4Y		5	6	7		52
		4	2		1	3		18
12DW7	12.6	4	9	5	1	2		33
		4Z	9		6	7		55
50BM8	50.	4		5	6	3	7	20
		4Z			9	1		64
7591	6.3	2	8	7	3	6	4	20

JACKSON MODEL 648

SET 504

SUPPLEMENTS LATEST ROLL CHART 648-23C

Tube Type	Fil.	D.	E.	Plate Test
6CW7	6.3	A127	A68	19 XZ
		A124	A35	19 XZ
6EV7	6.3	127	A89	54 Z
		123	A45	54 Z
6EW7	6.3	A127	A89	20 WY
		126	A45	39 VW
6FV8	6.3	A126	AC789*	24 XZ
		A123	AC45	19 XZ
6GY8	6.3	A12	A89	22 WX
		127	AC36	30 WZ
		12	AC45	27 WZ
7DJ8	7.5	127	A89	17 YZ
		123	A45	17 YZ
10EW7	10.5	A127	A89	20 WY
		126	A45	39 VW
12DW7	12.6	A123	A45	13 WX
		127	A89	62 WZ
50BM8	50.	125	AC389	33 Z
		A127	AC46	40 XZ
7591	6.3	126	458	32 W

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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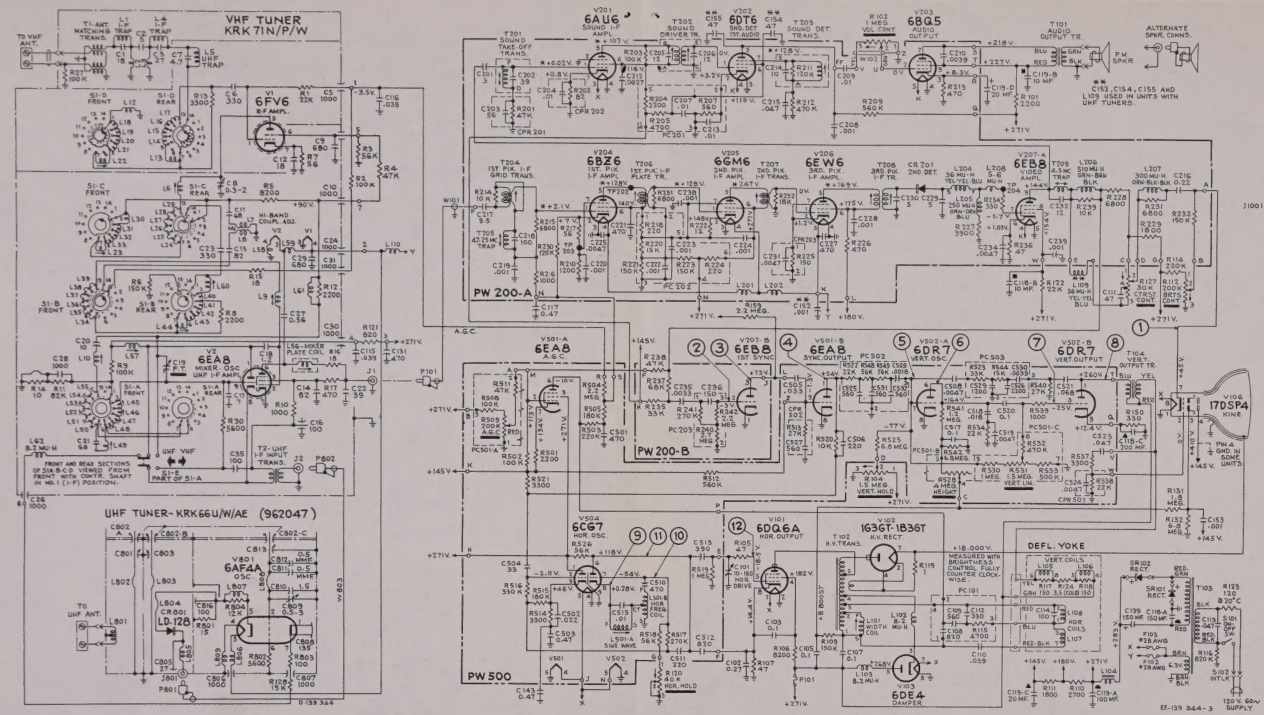
JACKSON
MODEL 658

SET 504

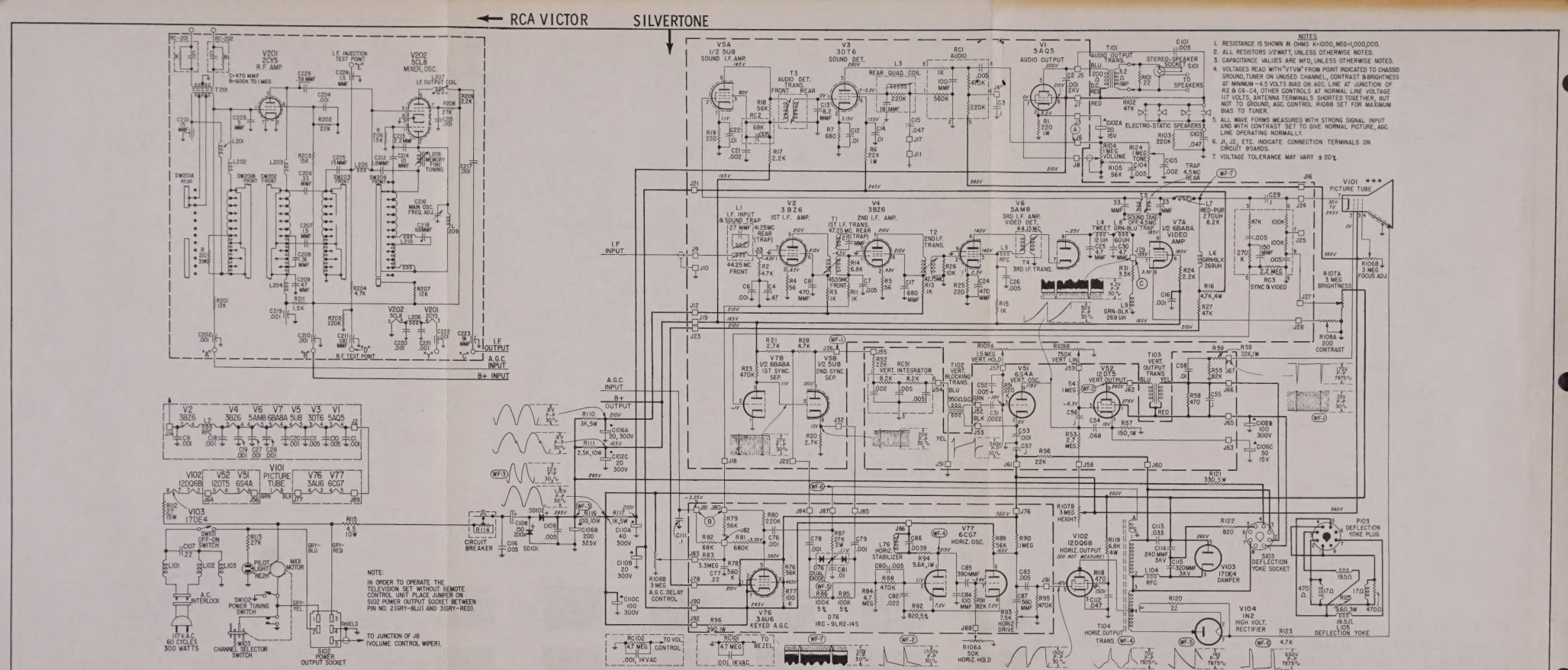
SUPPLEMENTS LATEST ROLL CHART 658-3

Tube Type	Sec.	Heater	Circuit H-K	Circuit P-G	Plate	Grid Test	Heater Current	
6CW7	T	6.4J	127	a68	24S	20WY•		
	T	"	124	a35	"	20WY•		
6EV7	T	6.4J	127	a89	30Q	14WY•		
	T	"	123	a45	"	14WY•		
6EW7	T	6.4L	127	a89	17Q	35WY•		
	T	"	126	a45	16R	62VY•		
6FV8	P	6.4J	127	ac689	41R	20WY•		
	T	"	123	ac45	21R	15WY•	A10.6M	Z450
6GY8	T	6.4K	12	a89	22	30WX		
	T	"	127	ac36	20S	10XY•		
	T	"	12	ac45	22S	10WY•		
7DJ8	T	6.4P	127	a89	16S	15WY•		
	T	"	123	a45	"	15WY•		
10EW7	T	10.6H	127	a89	17Q	35WY•		
	T	"	126	a45	16R	62VY•	A18.6L	Z600
12DW7	T	13.6H	123	a45	15Q	38WY•		
	T	"	127	a89	23Q	10XY•		
50BM8	P	50.J	125	ac389	72R	60VY•		
	T	"	127	ac46	42S	10XY•		
7591	P	6.4K	126	458	26Q	40VY•		


VHF TUNER
KRK 7IN/P/W
UHF TUNER- KRK66U/W/AE (962047)
PW 200-A
PW 200-B
PW 500
KRS 24 B
REMOTE CONTROL
AMPLIFIER
KCS 130M
CHASSIS
DEFL. YOKE
ALTERNATE CONNECTION FOR K1002
All schematics are shown in the latest condition at the time of printing.
All resistance values in ohms. K = 1000.
All capacitance values less than 1 in MF and above 1 in MMF unless otherwise noted.
Direction of arrows at controls indicates clockwise rotation.
All voltages measured with "Volt-Ohmyst" and with no signal input. Voltages should hold within ±20% with 120 v, a-c supply.
*Measured with 1 megohm, ½ watt resistor in series with meter probe.
Balloons ① ② etc., shown on schematic indicate points of observation of the waveforms shown below the schematic.

RCA VICTOR MODELS 171A032X, 171A034, U, 171A040, U, 171A042, U, 171A043, U, 171A044, U, 171A047, U, 171A061, U, 171A062, U, 171A067, U, 171A068, U, 171AR044, 171AR062, 171AR067 (CH. KCS130A, B, F, H, K, M, N, KRS24B)

Schematic Diagram Courtesy of Radio Corporation of America


RCA VICTOR
SILVERTONE
NOTES
1. RESISTANCE IS SHOWN IN OHMS K=1000, MEG=1,000,000.
2. ALL RESISTORS 1/2 WATT, UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE MFD, UNLESS OTHERWISE NOTED.
4. VOLTAGES READ WITH "VTVM" FROM POINT INDICATED TO CHASSIS GROUND, TUNER ON UNUSED CHANNEL, CONTRAST & BRIGHTNESS AT MINIMUM – 4.5 VOLTS BIAS ON AGC LINE AT JUNCTION OF R2 & C6-C4, OTHER CONTROLS AT NORMAL LINE VOLTAGE 117 VOLTS, ANTENNA TERMINALS SHORTED TOGETHER, BUT NOT TO GROUND, AGC CONTROL R108B SET FOR MAXIMUM BIAS TO TUNER.
5. ALL WAVE FORMS MEASURED WITH STRONG SIGNAL INPUT AND WITH CONTRAST SET TO GIVE NORMAL PICTURE, AGC LINE OPERATING NORMALLY.
6. J1, J2, ETC. INDICATE CONNECTION TERMINALS ON CIRCUIT BOARDS.
7. VOLTAGE TOLERANCE MAY VARY ± 20%.
V201 2CY5 R.F. AMP.
V202 5CL8 MIXER, OSC.
V203 2CY5 I.F. AMP.
V204 6AU6 I.F. AMP.
V205 6AL5 DET. 1ST AUDIO
V206 6AQ5 AUDIO OUTPUT
V207 6BQ5 VERT. OUTPUT
V208 6AU6 VERT. OSC.
V209 6AU6 HORIZ. OSC.
V210 6CG7 HORIZ. OUTPUT
V211 1N2 HIGH VOLT. RECTIFIER
V212 6BA6 VIDEO AMP.
V213 6AM8 3RD I.F. AMP. VIDEO DET.
V214 6AU6 KEYED A.G.C.
V215 6CG7 HORIZ. OSC.
V216 3BZ6 2ND I.F. AMP.
V217 3BZ6 1ST I.F. AMP.
V218 5U8 2ND SYNC SEP.
V219 6BA8A 1ST SYNC SEP.
V220 5U8 SOUND I.F. AMP.
V221 3DT6 SOUND DET.
V222 6AQ5 AUDIO OUTPUT
V223 6CG7 HORIZ. OUTPUT
V224 6AU6 CHANNEL SELECTOR
V225 17DE4
V226 12DQ6B
V227 12DT5
V228 6S4A
V229 3AU6
V230 6CG7
V231 12DQ6B
V232 6BA6A
V233 6AM8
V234 6AU6
V235 6AU6
V236 6AU6
V237 6AU6
V238 6AU6
V239 6AU6
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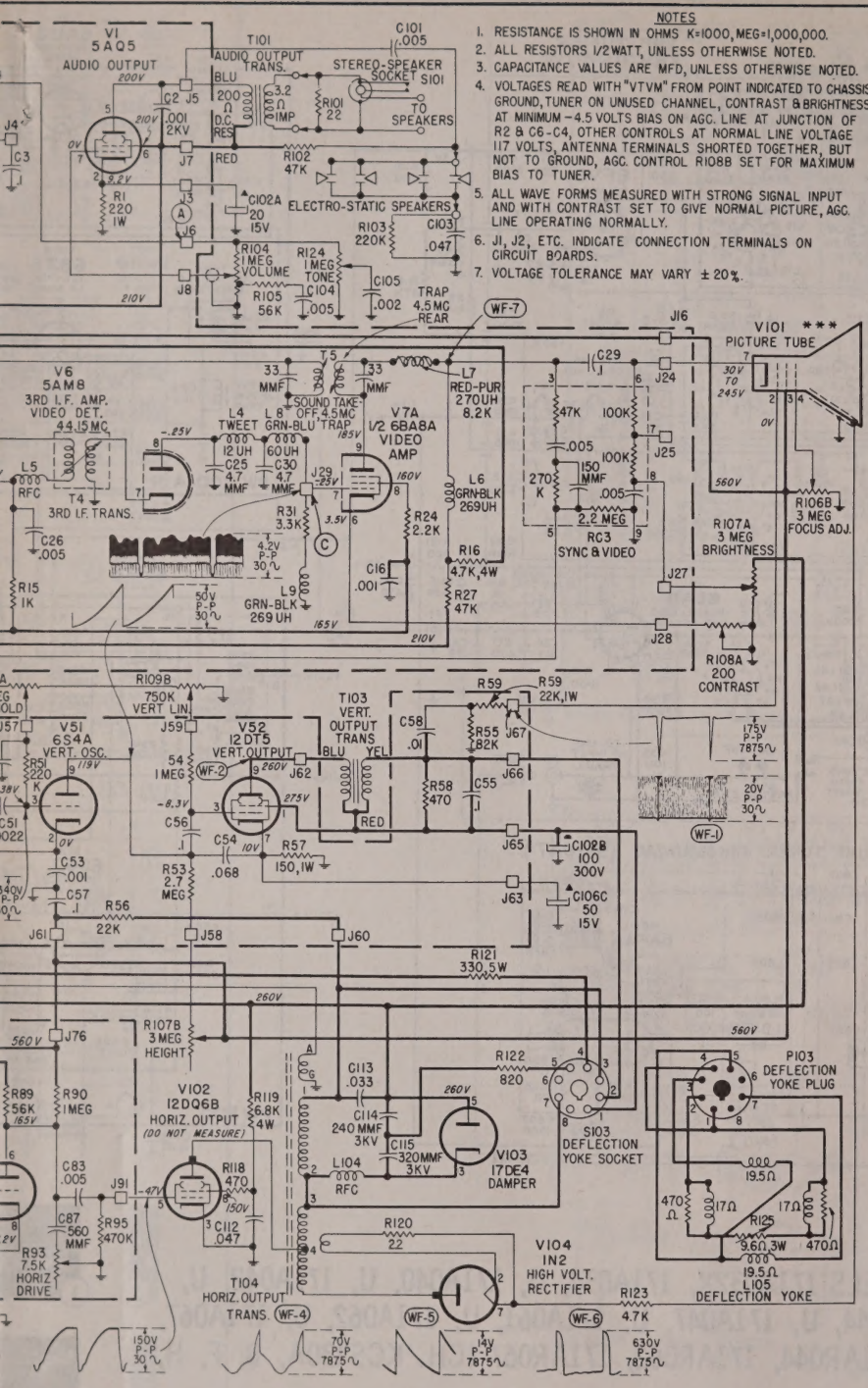

Schematic Diagram Courtesy of Sears, Roebuck & Company